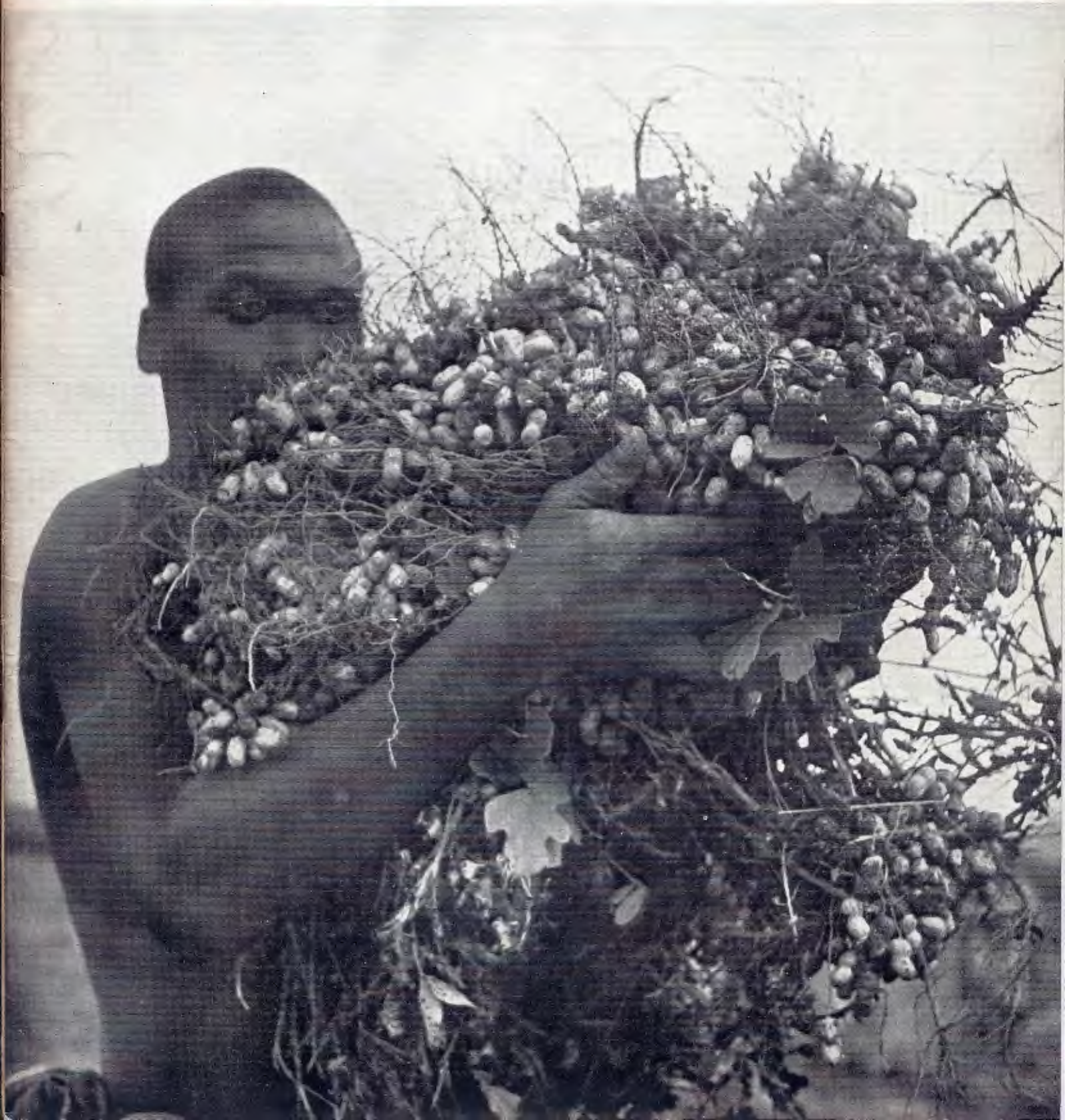
ICI MAGAZINE

PRICE TWOPENCE

APRIL 1951



THE I.C.I. MAGAZINE

VOLUME 29 NUMBER 174 APRIL 1951

The *I.C.I. Magazine* is published for the interest of all who work in I.C.I., and its contents are contributed largely by people in I.C.I. It is edited by Richard Keane and printed at The Kynoch Press, Birmingham, and is published every month by Imperial Chemical Industries Limited, 26 Dover Street, London, W.1. Telephone: REGent 5067–8. The editor is glad to consider articles for publication, and payment will be made for those accepted.

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Front Cover: The groundnut—alias peanut, alias monkey-nut—provides, after extraction of oil for soapmaking, the protein raw material from which 'Ardil' is made. Our picture shows a native holding a magnificent bunch of groundnuts newly lifted from the soil.

OUR CONTRIBUTORS

MICHEL TABET *is one of the agricultural technicians of the I.C.I. office at Beyrouth. He studied agriculture in Algeria and later was in the Lebanese Ministry of Agriculture.*

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GEORGE LUPTON *is a boiler chargeman in the Powfoot factory near the Solway Firth. He is a man with an original turn of mind. Not only is he a recognised authority on the racing and training of homing pigeons but he recently won a £25 suggestion award.*

FROM GROUN

The Development of a new Wool-like Fibre

Over ten years of development and research at the hands of I.C.I. have gone to producing 'Ardil,' made from the protein of the groundnut. The inside story of this remarkable achievement is told here for the first time.

THE idea of making a synthetic fibre is a very old one. It must have occurred to many a man who watched a silkworm or a spider producing a filament. In 1664 Dr. Robert Hooke, Curator of the Royal Society, wrote a book called *Micrographia*. In this he says there might be "a way found out to make an artificial glutinous composition, much resembling, if not full as good, nay, better than that excrement or whatever substance it may be out of which the silkworm wire draws his clew. . . . This hint, therefore, may I hope, give some ingenious inquisitive person an occasion of making some trials." In the three hundred years since Robert Hooke's day there have been thousands of "ingenious, inquisitive persons" following up his suggestions and making trials.

Most of the synthetic fibres which have been made have been on a cellulose basis, that is, the starting material has been cotton or woodpulp. In general the physical properties have been similar to those of cotton. These fibres have been woven into cloths, usually for ladies' dress materials. Very attractive effects have been achieved. In general, however, the fabrics are more suitable for summer wear and indoor wear, because they are not particularly warm. It is with wool, of course, that we usually associate warmth in clothing.

DNUTS TO 'Ardil'

HOW LIKE 'ARDIL' IS TO WOOL *is vividly apparent from this picture. Here 'Ardil' is being carded on standard worsted machinery*

Now, wool is very different both chemically and physically from cotton and from fibres made from cellulose. Wool is what the chemists call a protein. Cellulose is the structural material of plants. Proteins, on the other hand, form a large part of the animal body—muscle, hair, nails, hooves and so on. We all know that proteins are an essential part of our diet, indeed an essential part of the diet of any animal. The animal eats cattle cake, grass and so on and makes the meat which we appreciate in the form of steak or a leg of mutton. We also eat protein in other forms such as fish, cheese, eggs and milk. Now, proteins are made up of units which the chemist calls amino acids. When any animal consumes protein the latter is broken up into these units, which are sent into the blood-stream of the animal, and the body selects what it requires to synthesise muscles, hair and so on.

In the case of the sheep only a small part of the protein consumed reappears as wool, the bulk of the protein being used for other purposes. The question, then, which arises in the mind of the "ingenious, inquisitive person" is—can a more efficient formation of protein fibre be formed ? Can the protein be dissolved and re-formed in filament shape, just as wood cellulose is dissolved and regenerated in the form of rayon filaments ?

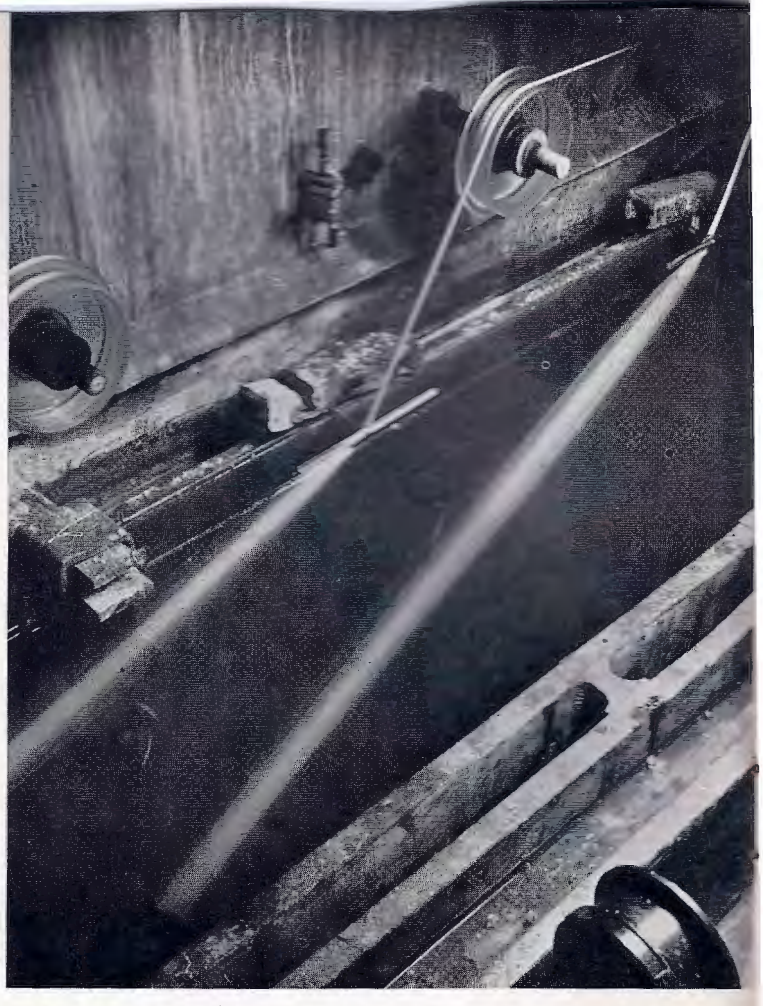
There have been many attempts to do this during the past century. In the first attempts gelatine was the starting material, and in later attempts casein (the protein present in milk) was used. Most of the fibres produced failed commercially because they could not be washed and dyed like wool.

Casein is used in the manufacture of adhesives and paper glazes. To increase the production of casein involves difficulties. It has been calculated that to produce one ton of casein requires the annual milk yield of ten cows. Vegetable proteins, therefore, seemed to us a preferable starting material, and for various reasons, technical and economic, groundnuts were chosen.

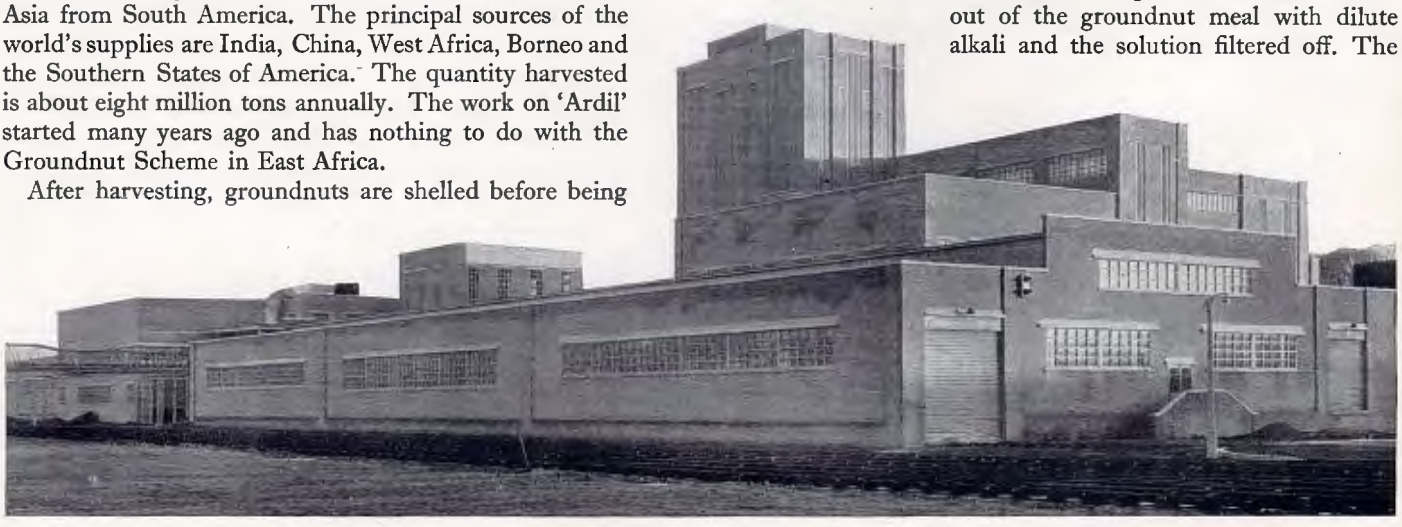
Groundnuts, so called because they grow in the ground, are the seeds of a sub-tropical plant, *Arachis hypogaea* L., and are more commonly known as peanuts or monkey nuts. It is a small plant, some ten inches high. It is an annual crop, and in some parts of the world grows easily. After fertilization the stalk of the ovary elongates, piercing the ground to a depth of 1–3 inches, and the pod ripens. The seeds are dug up and collected. The groundnut was introduced into Africa and Asia from South America. The principal sources of the world's supplies are India, China, West Africa, Borneo and the Southern States of America. The quantity harvested is about eight million tons annually. The work on 'Ardil' started many years ago and has nothing to do with the Groundnut Scheme in East Africa.

After harvesting, groundnuts are shelled before being exported to Britain. The kernel of the nut contains about 50% of oil. This oil is the principal raw material from which margarine is manufactured—hence our national interest in the groundnut.

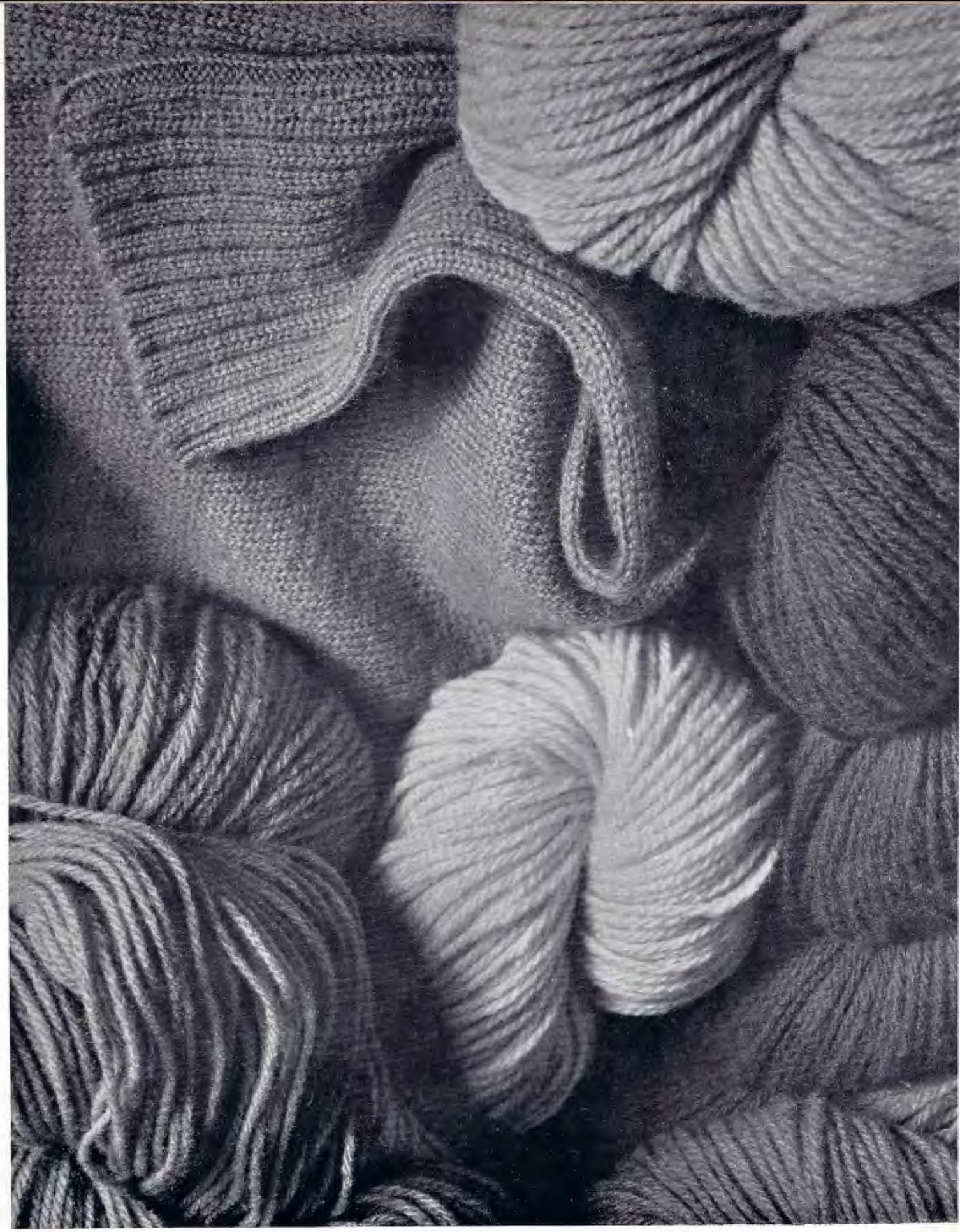
After the removal of the oil the meal left contains about 50% of protein, and this is the starting material for 'Ardil.' For our purpose the oil is entirely removed from the nut under special conditions. The protein is then dissolved out of the groundnut meal with dilute alkali and the solution filtered off. The



THE MOMENT WHEN 'ARDIL' FIRST BECOMES A FIBRE. *After passing through the spinneret the brown syrupy solution forms a tow of filament in the coagulating bath. From this filament the fibre is drawn*



THE NEWLY BUILT FACTORY *for 'Ardil' on the outskirts of Dumfries. The inside of the building is tile-lined and scrupulously ventilated, since cleanliness is essential for the manufacture of 'Ardil.'*



INDISTINGUISHABLE FROM PURE WOOL, *even to the expert, are these knitting yarns, in which 'Ardil' and wool are mixed fifty-fifty*

THE VERSATILITY OF 'ARDIL' *is clearly shown by these woven tweeds and dress materials. Dyeing presents no problem.*

undissolved part of the groundnut meal is recovered and is a valuable cattle food. The protein solution is acidified, and the solid protein thus obtained is dissolved in dilute caustic soda. It is then extruded through spinnerets with very fine holes into an acid coagulating bath and after a special treatment with formaldehyde is washed and dried.

There are really no natural fibres for textiles. Man has diverted natural fibres to his own use. Machinery has therefore been developed to spin relatively short fibres such as cotton and wool into long yarns suitable for weaving. 'Ardil' can be used on the machinery existing in Yorkshire and Lancashire for dealing with wool and cotton but has, of course, to be cut into the requisite length. Cotton fibres are usually about 1½ inches long, whereas wool varies up to 5 or 6 inches in the finer qualities and even longer in the cross-breds and Indian wool. Again, wool varies in diameter. The fine wools required for worsteds come from the Merino sheep now bred in Australia. The diameter is less than 1/1000 of an inch. Carpets, on the other hand, are made from a mixture of wools, and coarse wools are included to give stiffness to the pile. Such wools may be 2/1000 of an inch in diameter. 'Ardil' can be made for various purposes by suitably varying the diameter. This means, of course, using various spinnerets with holes of different size.

A special characteristic of the wool fibre is that the surface has scales. These scales are the cause of shrinkage in woollen garments; but it is also because of these scales that fibres made from wool can be milled to give cloth the "body" required. Likewise these scales enable woollen felts to be made. 'Ardil,' on the other hand, has quite a smooth surface; it is like a wool without scales and will not mill alone.

In order to render wool unshrinkable it is given a chlorination treatment which affects the scales of wool, rendering the tips plastic under washing and milling conditions and so enabling the fibres to slip easily backwards and forwards. Mixtures of 'Ardil' and chlorinated wool do not shrink. Mixtures of 'Ardil' and ordinary wool mill like wool. In fact, in some cases 'Ardil' improves the milling properties, and so 'Ardil' is a very useful fibre complementary to wool.

This is important today, when there is such a scarcity of wool in the world and when, as a result, the price is so high. 'Ardil' is non-inflammable like wool and fundamentally has the same dyeing properties. In moisture absorption and thermal properties also 'Ardil' is similar to wool. 'Ardil'-wool mixtures have been made into worsteds, woollens, hosiery, blankets, felts, carpets and hats. Such textiles from 'Ardil'-wool blends are, in general, indistinguishable from the all-wool product. In the case of some tweeds and in raised cloths, that is those which have been treated to give them a hairy or fur-like surface, the addition of 'Ardil' to the wool makes the cloth softer. It gives the effect which would be achieved by using a finer quality of wool.

'Ardil' can be mixed with cotton or with viscose staple fibre, and the addition of the 'Ardil' completely changes the character of the cloths produced. The 'Ardil' improves the handle, making the cloth warmer and softer; it also makes the cloth less creasable and improves the draping properties.

The dimensions of the 'Ardil' fibre, that is, the length and diameter, can be controlled and a regular product produced. 'Ardil' can be made fine enough to mix with the higher qualities of Merino wool from Australia. It can be made suitable for mixture with the cross-bred wool produced in this country and it can also be made in greater diameters similar to the coarse wool imported from East India and used to give the resilience necessary in the pile of carpets. 'Ardil' will therefore be found in ladies' dress materials, in men's suitings, in blankets, in hats, in carpet felts, in hosiery, in upholstery and in carpets. It will cost a fraction of the price of wool and so help to reduce the cost of clothing. It will not be subject to violent fluctuations in price—a very important thing from the woollen manufacturer's point of view.

Many other fields of development lie ahead. In the laboratory we have made 'Ardil' of a diameter finer than any wool, and this may lead to new types of cloth. Research work continues with the object of making stronger 'Ardil,' but in

general we have to compromise in making synthetic fibres. If we gain great strength we lose moisture absorption and so change the uses of the fibre. For example, the strong fibre unaffected by water and unaffected by bacteria may be ideal for a fishing net but useless in the manufacture of towels. The chemist can now produce a fibre for practically any purpose. 'Ardil' is essentially a wool-like fibre, and the outlet for 'Ardil' as now made lies mainly in the textile industry.

A close association with the textile trade has always been maintained by various Divisions of Imperial Chemical Industries Ltd. We supply a very large variety of products to the textile industry—caustic soda for mercerising cotton, sodium carbonate for scouring wool, chlorine for bleaching cotton fabrics, dyestuffs, detergents, antistatic agents, urea and formaldehyde for crease-resisting resin finishes and for other uses.

Now our interest has become enlarged with the decision to manufacture such fibres as 'Ardil' and 'Terylene.' We already manufacture nylon in association with Courtaulds, and you read of this in the *Magazine* of August 1950. Our connection with fibres, however, goes back still further. The first synthetic fibre was made from nitrocellulose, and when this was manufactured in Great Britain by the Bulmer Rayon Company the nitrocellulose was supplied by Nobel Industries. You will see, therefore, that for a long time we have had an interest in the production of fibres.

Many years of research are necessary before a new fibre is produced. When such a fibre has passed the laboratory stage there is still an enormous amount of work to be done on the development of the uses and the testing of the materials produced. The idea of using vegetable protein as a starting material for new products was first discussed by the Development Department and the Nobel Division in 1935. Just before the outbreak of war enough fibre was produced in the laboratory to enable a number of suitings to be made, and some such suits made from a blend of equal parts of 'Ardil' and wool are still being worn.

Then when war ended, a small pilot plant was built and sufficient 'Ardil' produced to enable us to form some idea of its commercial possibilities. The response from the trade seemed satisfactory, and in 1947 the I.C.I. Board gave the project their blessing. Another year had to elapse, however, before supplies of raw materials could be guaranteed. In 1948 the design of the 'Ardil' plant was started. Work on the site at Dumfries was started in April 1949, and in less than two years from the time of starting the plant is in production.

In the manufacture of 'Ardil' cleanliness is essential. The factory is in an attractive countryside. Many of the walls are tile-lined, and the plant is very efficiently ventilated and any objectionable fumes removed. The process developed is a continuous one. The output, when the plant is on full production, will be 20 million pounds per year—much less than the quantities of wool, rayon and cotton which we use, but a valuable contribution to our textile industry.

'ARDIL' FURNISHING FABRICS *take a printed pattern as well as any of the traditional materials*

Information Notes

CAN PLASTICS PROVIDE THE ANSWER?

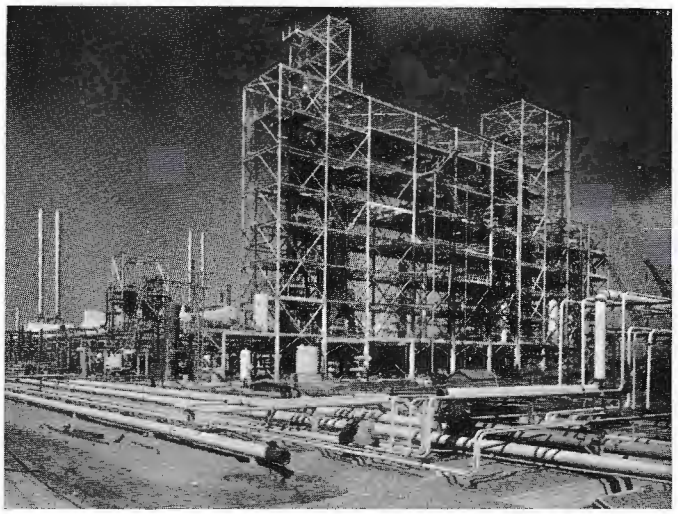
Contributed by Plastics Division

Can an answer to some of Britain's raw material shortages be found in increased production of plastics? This question is often asked today. Here Plastics Division experts give convincing reasons why there is no such short cut. They reveal how closely the plastics industry is itself dependent upon raw materials in short supply.

In a world of shortages and high prices there is a tendency for people to think of plastics as substitutes for raw materials now becoming scarce owing to American stockpiling and the rearmament programme. Writers in the popular press have suggested that as plastics are made from indigenous raw materials (such as coal, lime, air and water) they should be freely available to make good deficiencies of metal—particularly non-ferrous metals—wood, rubber, and natural fibres.

This reasoning is not only fallacious, but it is also likely to do the plastics industry a serious disservice. Plastics possess their own valuable properties, but they cannot claim to make good serious shortages of traditional materials such as steel. On a tonnage basis there is, of course, a very considerable discrepancy between the outputs of the synthetic and natural materials. The estimated 1950 production of plastics in Britain was about 140,000 tons as against 16,000,000 tons of steel.

It is true that some plastics are derived wholly from indigenous raw materials, such as the products of coal tar, but the majority depend upon raw materials obtained from overseas. This dependence of plastics manufacturers on imported raw materials is, unfortunately, far greater than is realised outside the industry.



The Wilton petroleum cracking plant

The production of cellulosic plastics—cellulose nitrate and cellulose acetate—depends upon the import of cotton linters, principally from the United States. Britain's allocation of this material has recently been greatly reduced. For thermosetting moulding powders—phenol and urea formaldehyde—fillers are required. Cotton by-products are used for this purpose to a small extent, but by far the most common fillers are those derived from wood. Wood flour and pulp of good quality from the Scandinavian countries are very difficult to obtain at present.

As an important manufacturer of thermosetting moulding powders, Plastics Division is affected by this shortage of wood fillers. Another of the Division's products affected is 'Perspex' with its kindred materials, 'Diakon' acrylic moulding powders and 'Kallodent.' One of the important raw materials for these is acetone, derived from isopropyl alcohol, which is imported from America. Suppliers have recently notified a drastic cut in allocation. The shortage of acetone affects other plastics, because it is used as a solvent in their production. Chief among these are rayon, film and lacquers based on cellulose acetate.

It is a comforting thought that this shortage is only temporary, as I.C.I.'s new oil-cracking plant will soon make available large supplies of propylene gas for the synthesis of isopropyl alcohol.

At present the production of polythene depends on ethylene gas derived from alcohol, which itself is obtained by the fermentation of molasses, another imported raw material. It is true that the new I.C.I. cracking plant at Wilton will supply all the ethylene required for the new polythene plants, but here again oil, another imported raw material, is needed. In future years the British plastics industry will be using more and more chemicals obtained from oil, and not only I.C.I. but several other large companies will be taking a very active part in this development.

Even with regard to indigenous raw materials the position is not completely satisfactory. Demand for coal by-products by the plastics industry greatly exceeds supply. Although in the third quarter of 1950 production of phenol in this country was the highest ever, it was still not high enough. However, it is hoped that with increased output from the Billingham synthetic phenol plant in the first half of 1951 the position will improve. Apart from the production of phenol formaldehyde resins, I.C.I. also uses phenol in the manufacture of nylon.

The cresol shortage results from two causes—the greatly increased demand for cresylic acids from the chemical industry and the low yields of distillates from crude oils, which, because

of the poor-quality coal that has to be used, are below standard. Benzene is also in short supply. It is a raw material vital to the manufacture of synthetic phenol and also styrene. This chemical is now urgently needed for the manufacture of synthetic rubber and a plastic called polystyrene which is extensively used in America as a moulding powder. Imports of polystyrene from America have now ceased and home production has not yet been built up to meet expected high demands.

In a recent article in *The Times Review of Industry* a prevailing paradox in the plastics industry was pointed out—a profusion of goods for sale but a dearth of raw materials to meet over-full order books. The dearth of raw materials is likely to continue, but the profusion of consumer goods to which the writer refers is not. Already a large part of the output of British plastics manufacturers is used for important industrial and government applications. The proportion is likely to increase, and manufacturers of plastics raw materials are likely to find their order books easy to fill for a long time to come, because plastics have, on their merits, established themselves as vital materials of industry.

EXPLOSIVES FOR STEEL

Commenting on the Information Note on Blast Furnace Relining, the Appleby-Frodingham Steel Company have sent us the following remarkable figures on the saving of time which is being effected by the new technique of explosives. These figures indicate that if the new technique were generally adopted the steel productive capacity of the country might be increased by nearly 4%. *They write as follows.*

I can understand that when the volume of explosives used is considered, blast furnace relining does not deserve any more space in your magazine, but I doubt if there are many jobs where the value of properly used explosives can lead to such tremendous savings in an industry. The job to which you refer was carried out at a furnace of this company, and you may be interested in the following table:

Iron-to-iron times on relining have been as follows at Appleby-Frodingham:

Furnace No.	*Hearth Dia.*	*Date*	*Relining Time*
1	15 ft. 6 in.	1939	190 days
4	17 ft. 0 in.	1941	166 days
6	17 ft. 0 in.	1942	240 days
5	17 ft. 0 in.	1945	63 days
1	17 ft. 0 in.	1945	56 days
10	22 ft. 0 in.	1946	62 days
9	22 ft. 0 in.	1946	43 days
4	17 ft. 0 in.	1947	90 days*
6	17 ft. 0 in.	1949	48 days
1	17 ft. 0 in.	1949	40 days
5	17 ft. 0 in.	1950	36 days

* The furnace was actually relined in a shorter time but could not be blown owing to the fuel shortage.

This table shows you how we have pulled times down in our own company. We now reckon that a fair average figure should be 50 days. I believe that 150 days is not high as an average for the industry.

There are 96 furnaces blowing in the country at the moment, and if we assume a six-year campaign, the reduction of 100 days in relining time represents the equivalent of four additional blast furnaces.

Apart from the first three jobs in the above table, we have had the assistance of skilled I.C.I. operators using explosives. There is no doubt whatever that their work has been perhaps the biggest single factor in achieving present standards. One important thing we have learned is that it is very easy for amateurs like ourselves to demolish old furnaces by explosives, but it requires such expert service as we have received from I.C.I. to carry out such demolition without damage to operating plant situated only a few yards away.

AMERICAN METHODS

The top-level organisation of du Pont, the big American chemical company whose resources are on a scale comparable to those of I.C.I., is perhaps of general interest in that it differs in some respects from our own set-up. The chief feature of the du Pont system is an Executive Committee composed of the President and eight Vice-Presidents, all of whom are free from departmental responsibility. This account is taken from an article which appeared in the American monthly magazine Fortune.

Shortly before ten every Wednesday morning, nine men stroll into Room 9064 of the big air-conditioned du Pont building in Wilmington, Delaware, take places at a large oval table, and, with time out for lunch, usually remain in session all day. This is du Pont's Executive Committee, composed of the President as chairman and eight Vice-Presidents, and it is the head of the business. The President has no power not derived from this committee, and on it he has only one vote. The Vice-Presidents have no authority on their own, and they are not vice-presidents-in-charge-of anything. Their collective function is to think; their chief field of action is policy-making.

Basically, though not functionally, the new form is a military form of organisation, in which sharp separation is made between staff and line. The Executive Committee is the general staff, along with a powerful, interlinked nine-man Finance Committee, which holds the purse-strings. Ten separate industrial operating departments form the field or line commands, each as big as many an important corporation, each headed by a general manager charged with an investment and maximum authority to run the business. Attached to staff and line are fourteen auxiliary departments carrying on such company-wide functions as purchasing, traffic, engineering and long-range research.

The present committee is, like its predecessors, a shrewdly balanced team in age and talents. Of the nine members, two have primarily a research background, two financial, two sales, two production, and one engineering. Seven, however, are technically trained, and each has had experience in at least two broad areas of business. Each member, by another quirk of organisation, is designated an adviser in a broadly functional area of operations or to one or more of the auxiliary departments, but still without personal authority. "The only person I can issue orders to is my secretary," is the members' favourite way of putting it. The committee is never likely to be all technical, for it is in business for profit; nor is it likely to contain a lawyer, for the legal mind is not conditioned to the bold risk-taking by which du Pont lives.

Every Friday, when the carefully staggered monthly departmental reports, less frequent auxiliary-department reports,

and other reports of a wide nature flow in, this group buckles down to a long week-end of reading and readying itself for its Wednesday meeting.

Decisions are usually unanimous, but five-to-four splits occur, often in the fields of advertising, architecture, or public relations, in which every man considers himself an expert.

I.C.I. AT THE B.I.F.

By W. J. Marrable (Exhibitions Section)

The 1951 British Industries Fair opens on 30th April at Earl's Court and Olympia in London and at Castle Bromwich near Birmingham. The Company's main prestige stand at Olympia will be the same as last year's. This central exhibit is a large map of the world 25 feet long by 15 feet high, showing the Company's complex overseas organisation. A panel on the stand carries photographs of the principals of the overseas companies and agencies and another panel shows their head office addresses.

This exhibit is being shown for the second time for two reasons. Firstly because with the influx of visitors to the Festival of Britain our overseas organisation is bound to be of paramount interest. The second reason is a technical one. It was felt that in view of the heavy demands of the Festival of Britain upon the resources of contractors and designers, the work for new stands at the B.I.F. should be kept down to a minimum.

In addition to the main prestige stand, five other stands will exhibit individual products of the Company.

Pharmaceuticals Division at Olympia will exhibit a number of their medical and veterinary products, including 'Avlosulfon,' which is already contributing to the control of leprosy throughout the world. 'Avlonyl,' a nylon surgical film, is being exhibited for the first time. This is a colourless plastic wound dressing which, being permeable to vapour, allows the underlying skin to remain dry and healthy. Wounds covered with 'Avlonyl' heal more rapidly than those covered with the usual dressings. 'Anavenol K,' a new type of intravenous anaesthetic for horses, cattle, sheep and goats, and 'Cronetal,' a drug for the treatment of chronic alcoholism, are also being exhibited.

Leathercloth Division return to the B.I.F. at Earl's Court after a break of two years. The main feature of the stand is a comfortable reception room, upholstered in 'Rexine' and 'Vynide.'

Lightning Fasteners Ltd., also at Earl's Court, are featuring their new fasteners made of light alloy, dyed in a wide range of colours to match the tapes on which the teeth are mounted. These attractive fasteners, while very light in weight, are strong and durable and as long-wearing as fasteners made from nickel, silver or brass.

The Metals Division stand at Castle Bromwich will illustrate one of the activities of their Research Department. A small team will be at work determining the stresses set up in various non-ferrous wrought metals during and after welding, the object being to improve welding practice. This demonstration will be supplemented by a display of radiographs of finished welds and showing how photographs using a "gamma bomb" will penetrate as much as twelve inches into metals. Another point of interest in this stand will be photographs of the extrusions supplied by the Division for use in the main ribs of the Dome of Discovery at the Festival of Britain and also of extrusions for aluminium alloy railway coaches now under construction.

Plastics Division are devoting their Birmingham stand to the uses of I.C.I. plastics in engineering. Particular attention is being given to the use of nylon moulding powder for the moulding of small bearings and rings and similar components where the toughness and self-lubricating properties of this plastic can be exploited. Polythene tubing for water piping and polythene film for protective packaging and chemical plant lining will also be shown. The technique of joining and welding this film will be demonstrated.

A view of the main I.C.I. stand

SYNTHETIC SPRINGS AND AUTUMNS

By Dr. G. L. Hogben (Plant Protection Ltd.)

WHOLEHEARTED bamboozlement of nature would seem, at first glance, to have distinct possibilities. Something a little more serious than the mere aiding and abetting actions of our farmers! Why not apply some magic potion which would persuade reluctant plants that spring had not come—at least until all danger of frosts is over? Why not persuade the fruit tree to bring its crop to perfection as prices reach their zenith? Why not regulate plant growth in such a way that fruits and flowers arrive when most needed, regardless of season? This goes a little beyond actuality. But it may serve as a somewhat hopeful introduction to a few facts about the rather remarkable substances called plant growth regulators or plant hormones.

Apart from the fact that they all regulate plant growth in one way or another, these substances have widely differing effects. They may stop a plant from developing as it normally would; they may stimulate it to such frenzied activity that the plant dies, as if of over-exertion; or they may not affect the plant at all. If two different plants are placed side by side, one may be killed by the right growth regulator, while the other is untouched. When a weed like charlock grows side by side with a crop of oats, 'Methoxone,' the selective weedkiller discovered by Drs. Templeman, Sexton and Slade at the I.C.I. Jealott's Hill Research Station, kills the weeds but leaves the crop. This is the best known of all 'hormone' applications and has been of immeasurable value to farmers all over the world. Perhaps it is not so well known that Dr. Templeman has also discovered a chemical (I.P.P.C.) which leaves the weeds and kills the oats. This substance is not merely, however, silent encouragement to ruin one's neighbour's crops. It has obvious potential uses for killing grass-like weeds in broad-leaved crops.

The death of the plant may not, however, be the objective. Merely to stop the sprouts is often enough. Many kinds of nursery stock which are kept in store can be given inhibitions about sprouting by growth regulator treatment. Sprouting in stored potatoes causes considerable money loss—they weigh less and are harder to handle. Plant Protection Ltd. now market 'Tuberite,' another Jealott's Hill growth regulator development which stops this sprouting—for six months or more if necessary. It has no observed effect on eating or cooking. Cooks report that "pommes tuberites frites" continue to behave and taste just like fried potatoes.

From sprouting on potatoes it is not a far cry to fruit-growing. There are reports that fruit crops have been thinned successfully by the use of very diluted 'Methoxone' sprays. Another fruit problem is premature fall (it first occurred in the Garden of Eden!). In 1939 suitable growth regulator sprays were found for apples and pears ('Phyomone' is the corresponding Plant Protection product). Applied as the first fruit falls, they prevent the rest of the fruit from falling for about twenty days. Meanwhile, rumour has it, the original fallen fruit just lies about and gnashes its pips with mortification! Spraying (sometimes by aeroplane) thus simplifies the problem of using a limited labour force to pick fruit—the whole orchard of it—in the best possible condition.

Those to whom ripeness is all will approve the use of hormones in this connection, although full development is still to come. Bananas and lemons have been successfully treated. Other potential and actual uses include increasing the size of blackberries, controlling bacteria and mould-growing, and even applying as an ointment designed to control "athlete's foot."

Two of the commonest British uses should be mentioned. In tomato production, use of growth regulators such as 'P.P.' Tomato Set has led to better crops. In the garden, treatment of the ends of cuttings with 'Hortomone A' greatly aids the formation of roots for a very wide variety of plants.

Perhaps, then, the title of this note does not really mislead. We aid sprouting in the synthetic spring and prevent fruit-drop in the synthetically delayed autumn. It remains to synthesise Christmas. There are no reports about sprouts on Christmas puddings, but one indefatigable experimenter states that he has prevented the leaves from falling off Christmas trees. O. Henry tells the tale of a pneumonia case who was convinced that she would die when the last leaf fell off the ivy outside her window. A good-hearted artist climbed up the wall that night to paint a false leaf on the ivy just as the last real one was falling. The invalid recovered—but the artist died of pneumonia. Is it not reasonable to suppose that, if a growth regulator had been available, both lives would have been saved—and only the story would have been killed!

WHERE RUST DOTH CORRUPT

The annual loss to Britain from rust has been estimated at over £100,000,000 a year. Here a Paints Division expert tells of the latest scientific methods in combating this wastage.

The best method of preventing rust is still by applying paint, but unless paint is applied to properly cleaned metal any corrosion which may have started in the metal will continue beneath the paint hidden from the observer's eye; hidden that is for only a short time, as rusting will soon push the paint away.

The motor industry in particular is keenly interested in scientific cleaning of metal surfaces. Car bodies come off the production line dirty. The surface of the steel is contaminated with oil, handmarks, traces of rust, and soldering and welding flux residues. To apply paint to rusty or dirty metal is a waste of time and material, as this would result in the rapid breakdown of the finish.

Customers of Paints Division are now provided with a service of scientific advice on the appropriate method of metal pretreatment for their particular job. The word appropriate is used advisedly, for it is not unusual to find metal finishers employing pretreatments of their own devising which are only slightly less extravagant (and not very much more effective) than that suggested by the White Knight, who told Alice:

"I heard him then, for I had just
Completed my design
To keep the Menai Bridge from rust
By boiling it in wine."

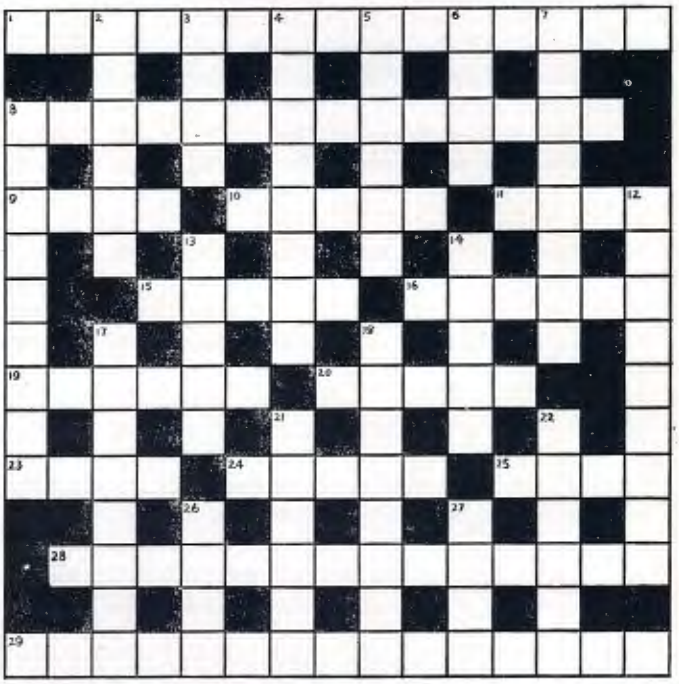
The Paints Division Metal Pretreatments Section attack the problem scientifically from two angles—the chemical removal of rust and dirt, and the treatment of the metal surface in such a manner that it will adhere to the paint.

To remove rust to clean steel and aluminium alloys a range of 'Deoxidines' is available. 'Deoxidine' was particularly useful during the war for the reclamation of weapons and stores. Today the needs of defence are no less pressing, but 'Deoxidine' is also increasingly used in the manufacture of all sorts of metal products, particularly motor cars. It provides a means of rapidly and completely removing rust, traces of grease, soldering fluxes, handmarks and alkaline residues.

Car owners sometimes complain that when the finish on their vehicles becomes chipped or scratched, rust forms at the site of the damage and spreads beneath the enamel, eventually pushing the latter up into unsightly blisters and necessitating the stripping and repainting of quite a large area. Motor manufacturers now realise the need for some protection against "rust creep" and provide this by using a phosphate coating process. The 'Granodine' range of chemicals will form smooth, tightly adherent rust-inhibiting films of metallic phosphate on steel surfaces. They are applied both by immersion and by spraying. But the 'Granodine' processes are not used only by motor manufacturers; in fact they are used to pretreat steel window frames, refrigerators, clock cases, radio components, cycle lamps, perambulators, and a great number of other articles on which paint must provide protection as well as decoration.

Nor is 'Granodine' used only on steel surfaces. Travellers from London to Swansea will see on the last stage of their train journey the new works of the Steel Company of Wales, now in the course of erection at Margam. The many thousands of galvanised iron sheets used in the construction of the gigantic sheds are being 'Granodised' before assembly and painting. On galvanised (zinc-coated) iron the problem is not rust creep but the failure of paint to adhere; zinc can react with the oils and resins used in paint to form soaps which destroy the bond between paint film and metal. The 'Granodine' film of phosphates prevents this reaction. Aluminium surfaces can also be given a paint-receptive phosphate coating by the 'Alocrom' process. It is both quick and economical and has already found widespread use in such varying applications as the batch treatment of small parts of scientific instruments, the continuous treatment of strip aluminium and the treatment of aluminium sheets to be used in structural engineering. 'Alocrom' will be used on all the aluminium sections of the new aircraft hangers (the largest in the world) soon to be erected at London Airport.

CROSSWORD PUZZLE



ACROSS

1. These have little weight with Metals Division. (9, 6)
8. Irish pigment? (9, 5)
9. Fateful for Caesar. (4)
10. It may be hard to get this out of satin. (5)
11. When full is just a point. (4)
15. Get the right angle on this Plastics product. (5)
16. Does not describe 14 down. (6)
19. This is not clear. (6)
20. Nor this. (5)
23. Ages in time. (4)
24. In slow time. (5)
25. Initially an African associate. (4)
28. Does this drug produce absentmindedness in motoring doctors? (14)
29. Alkali's factory is likely to be successful at first. (10, 5)

DOWN

2. Joined to call it dune. (6)
3. Lazy river. (4)
4. Are you doing nothing in I.C.I., Anton? (8)
5. Measure for rim, etc. (6)
6. Instrument of the Muses. (4)
7. This upsets your turnover. (8)
8. Stir most in brine for this. (9)
12. Go to dyes for a lupin, dear. (9)
13. Your decorator should use this. (5)
14. This kind is not put in vases. (5)
17. A French leader always starts this athletic event. (8)
18. This creature might make the oak groan. (8)
21. A painter and a graduate are found among the scraps. (6)
22. Recorded recollection. (6)
26. Initially inscribed on the crucifix. (4)
27. Prospect. (4)

For solution see page 123

SCHOOL FOR DRAMA

By Molly Quinn
(General Chemicals Division)

For theatre-lovers the summer schools of the British Drama League provide a stimulating holiday. Here there is room for students of every bent, from the player to the humble electrician and the volunteer stage manager. Miss Molly Quinn's vivid account conveys something of the atmosphere of enthusiasm and excitement which prevails.

DURING the past fifteen years the Amateur Dramatic Movement has grown and flourished with amazing rapidity, and in our vast I.C.I. organisation there must be hundreds of keen and energetic groups of amateur players. With them in mind, and also in the hope of enlisting other disciples, I should like to describe what may be to some drama-lovers a new source of interest and profit—I mean the Drama Summer Schools which are held each year by the British Drama League.

There are several of these schools each summer. The most famous is that held at Dartington Hall, Devon, in late July. I have never been able to visit Dartington, but I have listened to the lyrical descriptions of this Arcadia from students who have been there, and it certainly sounds wonderful.

Of one of the northern schools I can speak from experience. This school is usually held in St. John's College, York, and although this building does not offer the luxury which seems synonymous with Dartington, I can only say that St. John's College will ever occupy a secure place in my affections because of the happiness, friendship and instruction which I have enjoyed within its walls at the B.D.L. courses.

What happens at these schools? Well, on the evening of arrival and after the first meal, at which you find everyone behaving as though they had known you for years, the school adjourns to the lecture theatre. There the students are welcomed, and the various tutors announce the plays they intend to rehearse during the course and the casts they are likely to need.

Following this come the auditions. Students are called out in alphabetical order and are allowed two minutes either to do a small scene they have rehearsed or to read a piece from some play of their choice. To a new student this seems an alarming experience, and knees have a habit of feeling boneless as you walk out on the stage, but the tutors are an understanding and kindly set of people and every allowance is made for nerves. Those who do not wish to act may volunteer as stage managers, electricians, or wardrobe mistresses to the staff producers, and usually here the supply exceeds demand, so great is the enthusiasm. These volunteers are allowed to choose the particular play group to which they wish to be attached.

Next day notices are put up giving the names of the people chosen by each producer to act in his or her production, and

(*By courtesy of J. Arthur Rank*—This Modern Age)

DARTINGTON HALL, DEVON. *Students rehearse in the grounds.*

great is the excitement among the students as they jostle each other trying to find their names on the lists.

From then on activity is intense. Every morning after breakfast there is a class in "movement," either in the gymnasium or, if the weather is good, on the lawns. Exercises of all kinds are devised, always laying stress on balance and deportment. Here you see grannies leaping about with the same abandon as sweet young things of seventeen, and sedate old gentlemen vying with the younger bloods.

Every day too there is a two-hour period of rehearsal for the play groups. During this time the various sections meet, the plays are cast and concentrated rehearsals begin, in order that on the last day of the school a polished performance may be given.

At other times throughout the course there are lectures on lighting, stage management, costume-making and speech. There are demonstrations of mask-making, property-making, scene-painting and stage settings. You are shown the correct way to make a "flat" and how to paint it. You watch a papier mâché goblet grow from a basin, a saucer and a roll of stiff paper. You are amazed at the realistic jewels which emerge from a bit of cotton wool, tissue paper, a spot of bright paint and a few scraps of tinsel. Indeed, property-making and mask-making and stage settings prove so fascinating that you will find students giving up some of their free time to try making things themselves, or devising settings on the beautiful model stage made by one of the tutors. All lectures and demonstrations end in a general discussion, which usually becomes so lively and enjoyable that the lecturer has to bring it forcibly to a close in order that the programme may not be completely disrupted.

The last two or three days before the end of the course finds the school a veritable hive of activity. Costumes are tried on, wardrobe mistresses bustle about pinning and stitching. S.O.S. messages are sent out continually for this or that article of clothing. Indeed, if modern plays are being done you may

find yourself reduced to one garment, so much of your wardrobe having proved to be "just what I want for my first scene."

But it all adds to the fun. You will discover students in every nook and cranny, learning words or rehearsing in small groups of two or three. It is not unusual to pass a bathroom and see a student declaiming in a full voice with both taps turned on to the limit in an effort to drown the noise. As you are getting into bed at night you may hear a scene from *As You Like It* being done in the next room, and strange as it may seem, you *do* like it. Along one side of the quadrangle you will see groups of would-be scenic artists proudly adding finishing touches to cardboard trees and canvas rocks, their enthusiasm quite undimmed by the dubious looks of the B.D.L. scenic painting expert, though they willingly try to carry out the modifications she suggests.

Final Performance

And so to the last day. The morning is spent in a final check-up on lights, costumes and hand props, and you see that you have your greasepaints, mirror, comb, soap and towel, and any other personal things you need, ready to be picked up quickly when it is time for you to repair to the green room to prepare for your own performance.

After lunch the final performances begin. The theatre (in the school) is packed with students, friends they have in the district for whom they have wangled an invitation, and often a gathering of local guests. The first producer announces his or her scenes, and the show begins. With only seven or eight rehearsals the standard of these final productions has to be seen to be believed. Visitors sometimes doubt that these polished products are the result of one daily rehearsal, but such is the case.

Your own particular scene over, you go and wedge yourself into the already crowded theatre, and there, with a now light heart, you watch the remainder of the show. There is an interval for tea. This is a hectic meal, for many students are in costume, and you may find yourself passing the jam to Titania or having your cup refilled by a Zulu warrior in full war paint.

The performance over, the job of clearing up the mess begins. Costumes are collected and checked by wardrobe mistresses, all borrowed articles are returned, and stage furniture is carefully stacked. With all this done, a tired and happy crowd forgather for coffee in the common room to discuss the day's events.

Morning of Departure

The morning of departure brings the first note of sadness. Good-byes have to be said to all the friends you have made during these happy days. You bid good-bye to the staff and try to thank them for the help, instruction and stimulus they have given you. The taxis arrive and load up, and soon the Quad is empty again and the only voices are those of the birds. And you? You are on your way home, full of new ideas for your winter programme, and feeling glad that you have been able to share in that happy, friendly atmosphere which always surrounds a B.D.L. summer school.

Have I managed to interest anyone? I hope so. And in case you think it impossible in the crowded programme I have outlined above, the students *and staff* do find time to eat, to sleep, and—yes—even to visit the local. There is a saying that one thing leads to another. One Drama School most certainly leads to another, and if you go you will find yourself drawn back again year after year.

CHELTENHAM COLLEGE. *Summer course students being put through their paces on the stage.*

MATLOCK BATH, DERBYSHIRE. *Instruction on make-up is part of the curriculum.*

ST. JOHN'S COLLEGE, YORK. *A movement class under the direction of Rudolph Laban, the Continental expert in the art of expressive movement.*

A CARVED, PAINTED WOODEN CEILING *in the Palace of Beit-el-Dine near Beyrouth, once the residence of the Governors of Lebanon. The palace was built only* 150 *years ago, in pure Arab style.*

WHERE EAST MEETS WEST

The historic beauties of the Lebanon

By Michel Tabet (I.C.I. (Syria))

THE Lebanon is a small, mountainous country of about a million inhabitants, situated at the extreme eastern end of the Mediterranean. It forms part of the strip of land which unites Asia to Europe and to Africa. Because of this unique geographical situation it was already an important business centre 3000 years ago, when the only commercial means of transport were slow camel and horse caravans. The first great navigators of the world, intent on commercial pursuits, came from the Lebanon. They were the Phoenicians, who set out on adventure from the tiny ports of Sidon and Tyre of Biblical fame, who founded Carthage and Marseilles, and who even crossed the Straits of Gibraltar and went up as far north as Cornwall in search of tin.

In those days great armies could move only on foot; and inevitably Lebanon, then called Phoenicia, was overrun by each great tide of armed men going from one continent to another. This has made of Lebanon an archaeologist's paradise, for each great conqueror left permanent traces of his passage in the form of inscriptions, monuments and coins.

A few miles north of Beyrouth a small stream called Nahr-el-Kalb (Dog River) runs through a deep rocky gorge into the sea. Every conquering army had to clamber up and down this steep cliff, and many a general left his "visiting card" in the form of an inscription carved in the hard limestone.

Thus, among the most illustrious of the visitors whose names have been carved in the rock are Rameses II of Egypt, who lived in the thirteenth century B.C.;

THE I.C.I. OFFICE *is housed in this building in Beyrouth. As may be seen, nearly all the cars are American. Plenty of power is needed on the steep hills.*

Nebuchadnezzar of Babylon (587 B.C.), often mentioned in the Bible; and Marcus Aurelius Caracalla, a Roman emperor in the third century A.D.

Alexander the Great of Greece spent some time and effort in bringing this country under his rule, as had the Persians before him. The Romans left us the stupendous ruins of Baalbeck, which are known the world over. Centuries later the Crusaders occupied all the coast for nearly three hundred years, as is testified by all the Crusader castles still standing to this day. Later, Arabs and Turks each influenced the monuments of the country during their successive long dominations.

The inscriptions of Nahr-el-Kalb are in Egyptian hieroglyphics, Assyrian cuneiform, Greek, Latin, Arabic, English and French; and the most recent commemorate events of the second world war.

Among the events mentioned by the more modern inscriptions are the arrival of French troops sent in 1861 by Napoleon III to restore law and order; the entry of British and allied troops into Beyrouth and Damascus in October 1918; the building of the strategic railway from Haifa to Beyrouth and Tripoli by Australian troops in 1942; and, last but not least, the complete evacuation of all foreign troops from Lebanese territory on 31st December, 1946, when Lebanon assumed full status as an independent republic.

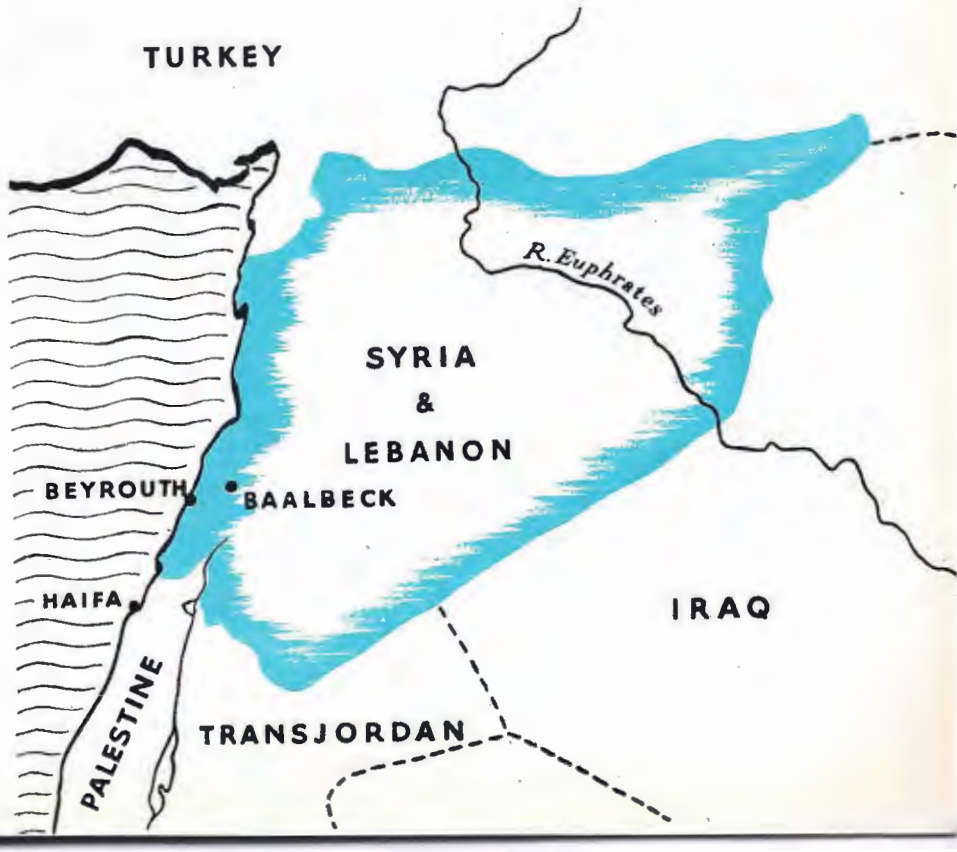
Besides being an important commercial and tourist city, Beyrouth, with its American and French universities and numerous secondary schools, is the outstanding cultural centre of the Near East. In 1939 the American University there had students from twenty-seven different countries.

There has been an I.C.I. office in Beyrouth, Lebanon, for over twenty years—first as a branch office of I.C.I. (Levant) and now as part of the organisation of I.C.I. (Export). Beyrouth is the commercial centre of an area which embraces the three independent states of Lebanon, Syria and the Jordan. The town itself is beautifully situated on a promontory jutting out into the sea, with Mount Lebanon immediately behind. The climate is typically Mediterranean, with more rain during the five cool months than in England in a whole year, and this is followed by constant fine weather during the summer and autumn.

Thanks to the irrigation of summer crops by canals which deviate the small mountain streams, two crops are grown per year on the narrow coastal strip. Here bananas and oranges dominate. On the hills, by dint of centuries of hard work spent on terracing the steep hillsides, vineyards and olive groves cover the lower slopes, while apples, cherries and pears grow higher up. On the broad plains of the interior, wheat and barley are the

THE BAY OF JOUNIEH, *in which lies the port of Beyrouth, the capital of Lebanon. A view taken from the hills behind.*

TEMPLE OF BACCHUS, *Baalbeck, built 1800 years ago during the Roman occupation in the first century of the Christian era*



ENTRANCE TO THE TEMPLE OF BACCHUS. *Notice the size of the stones, each weighing several tons, and the delicacy of the carving. A winding stairway leads from the little doorway on the right. It is built right inside the thick walls and climbs up to the top of the temple.*

A LEANING COLUMN *of the Temple of Bacchus—surely a remarkable testimonial to the craftsmanship of those days. The three stones used in each column were joined together by pieces of bronze sealed into the stones by molten lead. This joint turned out to be strong enough to withstand even the violent earthquake of* 1759.

THE LARGEST QUARRIED STONE IN THE WORLD, *it is said. It measures* 69 × 14 × 15 *ft. Stones only slightly smaller were transported out of this quarry and built into the foundations of the Temple of Baalbeck a mile away. This stone of* 2000 *tons seems to have defeated the enterprising architects and their armies of slaves, and they abandoned it.*

THE DANCING MONKEY AND ACROBATIC GOAT, *often seen in Lebanese streets. Occasionally a performing brown bear varies the show.*

TYPICAL LEBANESE COUNTRYSIDE *with the steep terraced hillsides, which are no easy job to cultivate. The houses have either red-tiled roofs or flat earthen tops.*

THE LAND OF THE CEDARS *of the Bible is the Lebanon. King Solomon roofed his temple in Jerusalem with Lebanese cedar-wood. This majestic old tree is estimated to be more than* 1500 *years old. The trunk is over* 30 *ft. in circumference. Unfortunately, very few of these fine old trees still exist.*

main crops; while in the irrigated areas in the north, maize, cotton and rice predominate.

This small country possesses no mineral or oil deposits, and only a small part of the available water power has been harnessed so far. Nevertheless industry has made great strides during the last thirty years, and is represented by spinning and weaving mills, large flour mills and tanneries. Cold-storage plants for fruit conservation, alcohol distilleries and beer breweries, modern wine cellars and jam factories transform the agricultural produce.

"East is East and West is West, and never the twain shall meet," said Kipling; and yet here in this small country of great contrasts it is not unusual to see a seemingly ignorant peasant turning from his archaic wooden plough to spray his fine fruit trees with insecticides which are the result of the most recent research in Europe or America. Looms turning out gorgeous brocades made of threads dyed according to the most advanced techniques may often be found installed in ancient caravanserais.

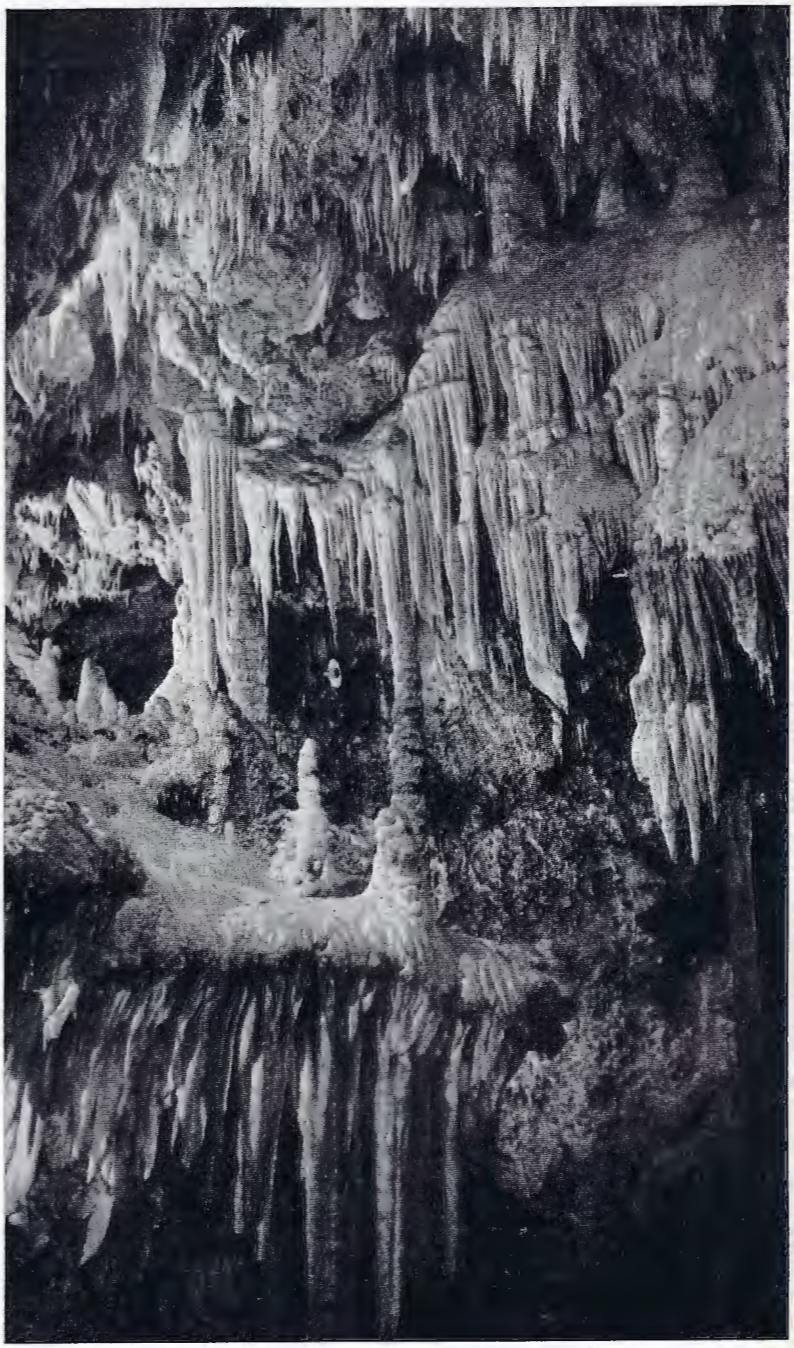
These changes from the old to the new—whether in medicine, agriculture or industry—are in part due to I.C.I. products and their technical service.

OLD CRUSADER CASTLE AT SAIDA, *built to protect the port in the eleventh century. The dome on the right is an addition of the Saracens, who drove the Crusaders out of the country* 300 *years later.*

ST. GEORGE'S HOTEL, *Beyrouth, where I.C.I. visitors generally stay. It is beautifully situated on the seashore, facing across the bay.*

THE SERAIL OF BEYROUTH, *an example of Turkish architecture, houses the more important government offices*

GENERAL VIEW OF BEYROUTH, *showing the port, the bay and the snow-clad mountains beyond. Mount Sunneen is* 8600 *ft. high and furnishes excellent skiable slopes for from four to five months of the year.*



THE GROTTO OF KADISHA, *near the Cedars, famed for the beauties of its stalactite formations. It is lit by electricity.*

I.C.I. NEWS

ALKALI DIVISION

Prizewinning Bull Terrier

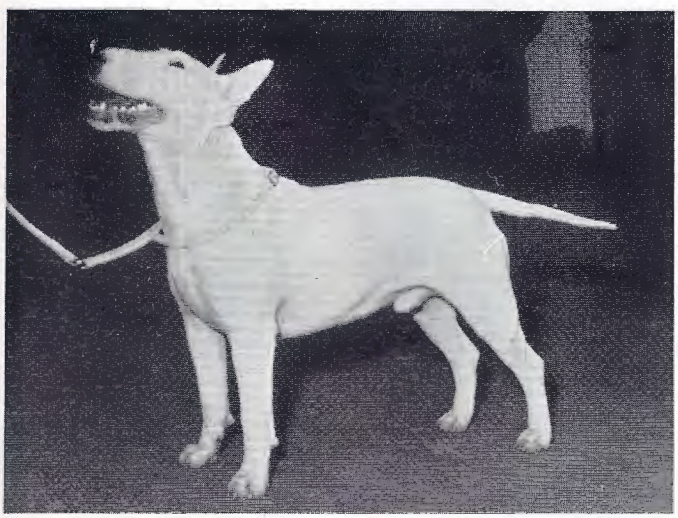
Melvin Son of Marguerite, a champion bull terrier bred by Mr. Walter Watkin (Engineering Dept., Winnington), carried off the principal prizes at the Bull Terrier Club of England's Open Show, held in London on 3rd February.

The dog won the Regent Trophy for bull terriers first exhibited in 1950 and the Ormandy Jug for the best bull terrier dog exhibited during 1950.

Melvin Son of Marguerite's greatest achievement during 1950 was to be judged the best dog in the show, out of 6292 entries from 84 different breeds, at the Ladies' Kennel Association Championship held at Olympia last November.

Mr. Watkin, whose father used to tell him exciting stories about his old bull terriers, began to study breeding them while serving in the Royal Navy during the war. He had papers and periodicals about dogs sent to him and read every book he could find on bull terriers.

"From these," he says, "I was able to form a good idea of the ideal type, although I firmly believed there were no bad bull terriers.



Champion Melvin Son of Marguerite

"Immediately after demobilisation I became the owner of my first bull terrier bitch. Her kennel name was Melvin Marguerite, her pet name Juno. I trained her myself for show, and in a very short time she had collected more than ninety prizes.

"Her first litter was to her half-brother, whose sire and dam were out of Juno's own mother. This was line breeding to the bitch who first took my eye, in preference to the prevailing fashion of line breeding to a dog, and the outcome of it has been Champion Melvin Son of Marguerite."

BILLINGHAM DIVISION

Record Year

Continuing their production drive, many Billingham plants in 1950 beat the all-time high records they established in 1949. Other plants established records for the first time and new plants added their quota to the ever-increasing output of the Billingham factories.

In a special message to all concerned in the production records, Mr. E. A. Blench, Division Production Director, said that Billingham might well claim to be at the very heart of the drive for improving the country's economic position, which was one of the pre-eminent problems of the present time. Despite difficulties and possible shortages of coal, coke, water, some essential raw materials and even manpower, he looked forward to another year of high production.

Among the more impressive records were those of the 'Nitro-Chalk' plant, which beat its 1949 figure—itself a record—by 21,000 tons, and an output of 413,500 tons of sulphate of ammonia, 12,000 tons more than in 1949. 'Nitro-Chalk' is in increasing demand by farmers as a top-dressing for grassland, and more sulphate of ammonia fertilizer means more wheat, oats and barley, more potatoes and market-garden crops, more feeding stuffs for livestock and more food in the shops. During 1950 Billingham produced £3½ million worth of the total £6 million worth of sulphate of ammonia exported on behalf of the British Sulphate of Ammonia Federation.

Plastics Works created three records: the output of 'Diakon' dental products was 38% higher than 1949's record figure, 'Diakon' moulding powder production was stepped up to 185% above the previous year's record, and the amount of monomer recovered from scrap 'Perspex' to meet the shortage of raw materials was 44% up on the previous highest.

During the first working year of the new urea plant output was almost doubled, and the quality of the product was higher than ever before. The old urea plant also established record output figures. Nearly 35,000 tons of urea were made in 1950, compared with the 1949 total of 17,800 tons.

Even with shortages of raw materials, Casebournes beat their previous highest output of 268,200 tons of cement by

1100 tons. Also, the productivity per man of this vital building material increased by 8%.

The number of rail wagons required to transport raw materials and finished products inside the factory during the year was 569,316, more than 13,000 above the previous highest established in 1949.

Mr. A. J. Prince

Mr. A. J. Prince, Manager of the Development Department, has been appointed a director on the Billingham Division Board.

During his twenty-three years at Billingham Mr. Prince has had a varied technical career, spending the greater part of his time in the Research Department with intervening periods in the Process and Technical Departments. He has been overseas on special assignments for the Company on many occasions, visiting most European countries and the United States.

Mr. Prince graduated at London University and is a Master of Science, Fellow of the Royal Institute of Chemistry and a Member of the Institute of Chemical Engineers. He is also a past vice-president of the Royal Institute of Chemistry and a founder member and past chairman of the Tees-side local section.

I.C.I. Man to stand for Parliament

Mr. F. T. Webster (Lifting Gear Inspector, Engineering Works Services) considered invitations from seven different constituencies before he finally consented to be prospective Conservative parliamentary candidate for Newcastle Central Division.

Mr. Webster, who started in the laboratories as a fitter, has been with Billingham Division for twenty-eight years. When ammonia was first made at Billingham on Christmas Eve 1923, he was the fitter-driver in charge of compression in the old No. 2 Unit.

He has been a member of the Amalgamated Engineering Union for the last twenty years and is well known among his workmates, having been a shop steward from 1936 to 1938. He has also been a member of Stockton Town Council since 1949.

Miners win Safety Trophy

A record in reducing accidents from nearly 300, four years ago, to 27 last year is held by Billingham anhydrite miners, who have won the Inter-Works Safety Trophy for the second successive year.

Congratulating the miners on their achievement, Mr. A. T. S. Zealley, Division chairman, referred, when presenting the trophy at a recent ceremony, to the nature of the miners' work and said it was remarkable that they had won the trophy for two years running. Such a record could have been accomplished only by the fullest co-operation by all concerned in the teaching and the practice of safety.

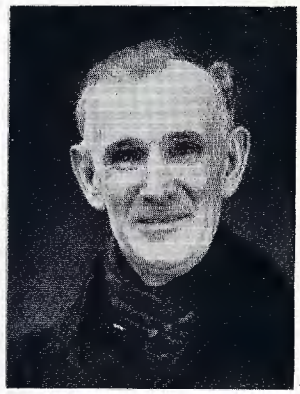
Mr. H. F. Wilson, Inspector of Mines, who was present at the ceremony, said he had been impressed by the miners' safety record. Saying that he thought the new methods of working adopted in the mine had contributed to its low accident rate, Mr. Wilson emphasised that safety and efficiency went hand in hand.

Foreman Mr. W. Hind gave a brief résumé on the good work of the Mine Safety Committee, which he said had helped to lower the accident rate.

An intensive campaign has been waged over the last two years to make every miner safety-conscious, and every available means has been used to show miners the causes of accidents and how they can be avoided. Posters in the mine draw attention to the common reasons for accidents like tripping and stumbling. All newcomers to the mine are shown a film on safe methods of working produced by the Billingham Film Unit in collaboration with the Mine Safety Committee.

Fifty Years' Service

Henry McErlane is going to be missed on Nitrates Section. Apart from short periods spent on the 'Drikold' and sulphuric acid plants he has been there for twenty years, working on different nitrates processes and finishing up in the sodium nitrite plant.



Mr. McErlane started at Billingham in 1928, when he first worked in the sulphate plant—transferring a year later to the new phosphate plant, which had just started up. But even in 1928 he was already a long service man, having been twenty-eight years with the United Alkali Company at Gateshead-on-Tyne, where he was employed on the river barges.

At 6 a.m. on 19th February Mr. McErlane went into retirement—unwillingly, because he would have preferred to keep on working if his health had been better. He lives near the factory and will often see his old workmates, and if he needs anything else to remind him of his fifty years with the chemical industry he has his four Long Service Awards—a silver watch, a medal, a gold watch and a chiming clock.

Billingham Men leave for South Africa

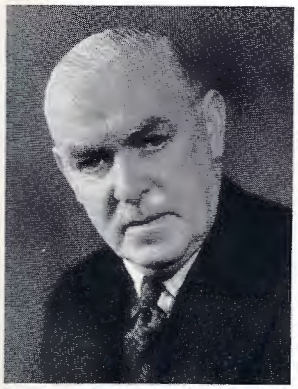
Presentations have recently been made to six Billingham men who are taking posts with A.E. & C.I. Ltd., South Africa. They are Messrs. H. Hardie, J. B. Whitworth, K. W. Snowden (Research Design Section), R. Riccalton (Oil Design), R. Firman and W. Forster (Prudhoe).

Mr. Hardie has been captain of the Chief Engineer's Department Rifle Section since the war. Each year the section has been runner-up in the inter-departmental competition. This year it seems certain they will win, but Mr. Hardie will by then be many thousand miles away.

DYESTUFFS DIVISION

Board Appointments

As a result of the increased work and responsibility caused by the now rapidly expanding business of I.C.(P), Mr. P. A. Smith has relinquished his post of Joint Managing Director of Dyestuffs Division in order to devote all his time to the chairmanship of the I.C.(P) Board. Mr. Harry Jackson, who has been a member of the Dyestuffs Division Board since 1945, was appointed Joint Managing Director in place of Mr. Smith on 22nd February, 1951.



Mr. H. Jackson

Mr. Jackson began service with the Company when he joined Levinstein Ltd. in 1913. During the next eighteen years he worked in all sections of the Dyehouse Department until in 1931 he became Chief Colourist. In 1939 he went over to the commercial side, and was appointed Home Sales Manager in 1940 and Division Commercial Manager in the following year. Mr. Jackson enjoys a very busy life and has been a member of the Dyestuffs Control Advisory Committee of the Board of Trade for eleven years and chairman of Group D of the Association of British Chemical Manufacturers since 1946. Any spare time that he has left is taken up by such outside interests as tennis, photography and gardening.

The appointment of Mr. S. Howard as a director of Dyestuffs Division also took place on 22nd February. Mr. Howard joined British Dyestuffs Corporation twenty-nine years ago and, like Mr. Jackson, began his career in the Dyehouse Department. In 1933 he was transferred from the Dyehouse to the Sales Department, which at that time dealt with both the Home and Overseas business of the Division. He was made an Assistant Sales Manager in 1940 and Homes Sales Manager in 1943. Mr. Howard, who is a family man with three daughters, is already known to our readers through his article last July entitled "The Pleasures of Coarse Fishing"; a pleasure which is one of his main relaxations and which he shares with his other hobbies of golf, gardening and photography.

Mr. S. Howard

Report on American Tour

The I.C.I. members of the Pharmaceutical team which recently visited the United States under the auspices of the Anglo-American Council of Productivity have now given us some impressions of their tour. They were Mr. James Brennan, superintendent-in-charge, pharmaceutical processing, Mr. William Irving, fitter chargehand (both of Dyestuffs Division's Regent Factory, Linlithgow), and Mr. Harry Smith, section leader draughtsman (Division Engineering Dept., Hexagon House, Manchester).

The team sailed from Southampton in the *Queen Elizabeth*, meeting very heavy weather, and we understand that the Pharmaceutical team's table was the only one which could boast a full attendance at every meal during the voyage. Mr. Irving had a most interesting souvenir in a concert programme when he appeared in the ship's concert party in the Sunday evening concert. Billed as "Frae Bonnie Scotland," Willie's patter, a few stories and a song, went down very well in spite of the eighty-mile-an-hour gale which caused the ship to roll so much that four of the concert party had to retire precipitately.

On board R.M.S. Queen Elizabeth. *Left to right: Mr. J. Brennan, Mr. Ledgsom (of Evans Medical Supplies), Mr. W. Irving and Mr. H. Smith.*

Upon arrival in the United States the team was given its itinerary, which included visits to seventeen pharmaceutical firms and entailed more than 6500 miles of travel in just under six weeks' time. Inevitably, a great deal of the team's time in the States was spent in getting from place to place.

One journey from Washington to Indianapolis, scheduled to take 13½ hours, took 25½ hours because of a blizzard raging over the area. To cover the distances between visits to the various firms in the comparatively short time available entailed travelling at all times of the day and night. The sleeping berths on the trains were considered to be rather better than on our own railways but were not on the whole quite so comfortable because of the amount of lateral sway and the greater noise.

The team was most cordially welcomed wherever it went and the English Speaking Union entertained the visitors most hospitably; the Buffalo branch of the Union chartered cars to take them round Niagara Falls. They also visited the international show in Chicago, where, although the rodeo and show jumping and pony riding were very interesting, the highlight of the proceedings was the parade of the pipe band dressed in its Royal Stuart tartan.

It was the general opinion that the people in the States were possibly rather more forthcoming and ready to make friends but on the whole very like ourselves. The children, however, seemed to be more precocious and less outwardly respectful to their parents. One member of the team said, "If one of my kids had spoken to me as I heard some children over there speaking to their fathers and mothers there would have been a bit of spanking going on!" The home hospitality was very fine,

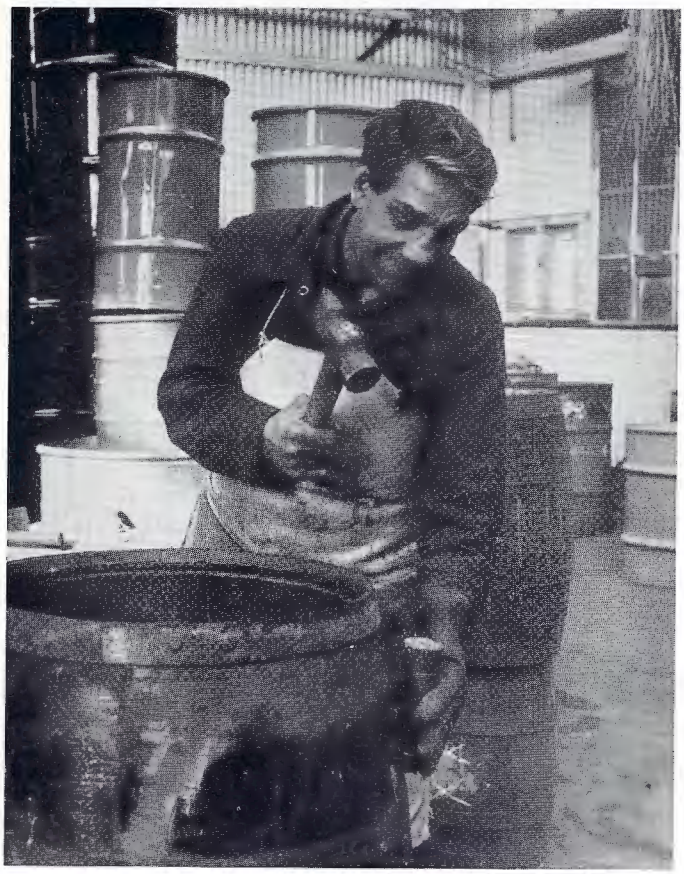
though the lack of open fires was strange and the central heating was found to be rather enervating.

The return trip in the *Queen Mary* will also be remembered by Mr. Irving because he managed to "gatecrash" a concert in the crew's quarters, where he met Miss Anna Neagle, the film actress. All three travellers were very glad to get back after a journey which had covered 12,700 miles.

Grangemouth's Boxing Coach

Ever since he was big enough to hold up his hands wearing a pair of 8 oz. gloves Mr. George Harden, a cooper in the Grangemouth Works of Dyestuffs Division, has been interested in the boxing ring.

East of Scotland amateur bantam-weight champion in 1912–13, he turned professional in 1913. He won most of his fifty professional fights by the knock-out route and fought a draw in 1915 with Johnny Best, the then Scottish champion. "Darkie" Harden's picture had a place of honour in the Melbourne Club, Edinburgh, where he is known as "one of the best."



Mr. George Harden at work

Now he is putting a polish on the young boxers in the Grangemouth Amateur Boxing Club, where his softly spoken words of advice are appreciated as of real value to any youngster with championship aspirations.

Geordie Harden was first employed by Grangemouth Works as a cooper from 1928 until 1936. After a spell away he returned to the Blackley Works of the Division in 1946 and was transferred back to Grangemouth in 1947. He is a family man with two girls and a boy.

Holed Out in One

While playing in a four-ball match at the North Manchester Golf Club on 25th February Mr. Donald Shewring holed out in one at the ninth hole (150 yards). This was during his second game at the club, which he joined only two weeks previously; his handicap is 12, and his name will now appear in the "Hole in One" list published in *Golf Monthly*.

Mr. Shewring is a maintenance electrician in the Division Construction Section at the Blackley Works of Dyestuffs Division, which he joined nearly four years ago. Before this he was in the Indian Army from 1927 to 1945. He started to play golf in 1936 and was a member of the Bannu Golf Club in the North-West Frontier Province. After his return to England he did not take up golf again until early last year.

GENERAL CHEMICALS DIVISION

Influenza Epidemic

Because of the splendid co-operation of both workers and staff during the severe influenza epidemic on Merseyside, which started in the second half of December, production did not suffer in any way. When the epidemic was at its height almost a quarter of the employees in the Merseyside works of the General Chemicals Division were absent. In order to maintain output, workers did double shifts, and the staff, too, worked very long hours.

METALS DIVISION

Mr. Leonard Hollyhead

We record with deep regret the death of Mr. Leonard Hollyhead on 25th February. Mr. Hollyhead, who was at the factory apparently in the best of health twenty-four hours before he died, was 52. He joined the Company as a draughtsman at Kynoch Works in 1920. From 1924 to 1930 he was on the engineering staff of King's Norton Works, returning then to Witton for a further eighteen years. On 1st February, 1948, he succeeded Mr. W. Baillie as Chief Engineer at Allen Everitt Works.

In addition to his duties as maintenance engineer, Mr. Hollyhead was responsible for the mechanisation of existing plant at Smethwick and the installation of units forming part of a large modernisation scheme.

In the comparatively short period of his term of office at Smethwick Mr. Hollyhead endeared himself to his colleagues with his quiet and unobtrusive manner and his readiness at all times to give a helping hand whenever his wide experience was called on. He will long be remembered by all members of the Athletic and Social Club for his services in connection with the provision of the new sports field.

Photographic Honours

Three members of the Metals Division were among those whose photographs were selected, from many hundreds of entries, for inclusion in the annual show of the Birmingham

Photographic Society in February. Dr. George Parker, who is chairman of the society's Scientific and Technical Section, was represented by two prints showing stresses in metals, and another member of the Division Research Department, Mr. E. Taylor, by two entries in the same class. Mr. V. M. Hill (Engineers) had two photographs in the Open Class.

Among the other prints shown were four snow scenes by Mr. J. Benjamins (Dyestuffs Division), one of which, "Morning Shadows," appeared on the back cover of the *Magazine* in August 1950. Incidentally, Mr. Benjamins was one of the very few exhibitors in the Open Pictorial Class who achieved 100% acceptance of his entries.

Charlie Retires

Our photograph shows Charlie, who has served I.C.I. at Elliott Works for a number of years and is now due to retire. He is the last of his line at this factory.

Although Charlie has never had any holiday, barring bank holidays, and although his wages have been only his food, with lodging accommodation and a blanket, he has always carried out his work in accordance with instructions and his great strength has always been placed willingly at the service of his masters.

Charlie, who brought to the present a flavour of the more leisurely past, was popular at the factory. Women admired his unusual but effective hair style and his long eyelashes. He carries with him into retirement the good wishes of all who know him.

NOBEL DIVISION

Mr. Adam Wilson, C.B.E., J.P.

With great regret we record the death of Mr. Adam Wilson, C.B.E., J.P., who retired from the chairmanship of the Nobel Division (then the Explosives Division) of I.C.I. on 31st May, 1945, after having occupied this post since 1942. Mr. Wilson died suddenly in Edinburgh on Thursday, 15th February.

His was a distinguished career in the British explosives industry, extending over more than half a century of brilliant service. Born in Stevenston, Ayrshire, on 13th August, 1882, Mr. Wilson entered the service of Nobel's Explosives Company Ltd., Ardeer Factory, on 3rd April, 1894, at the early age of 12. During the early years of his employment, first as apprentice draughtsman in the drawing office, then as draughtsman, he gained extensive knowledge of the engineering problems relating to industrial explosives manufacture, and still in the service of the company he left this country in July 1905 to become draughtsman and assistant engineer with the Japanese Explosives Company at Hiratsuka factory.

He returned to Ardeer Factory some three years later as senior draughtsman and in April 1914 became Chief Draughtsman on certain development projects. Some six months after the outbreak of the first world war he was made Assistant Chief Engineer at Pembrey, one of the largest factories built and operated by the company for the Government. When the first world war ended Mr. Wilson returned to the Technical Department, Nobel's Explosives Company, at Ardeer.

During the 1920's he went to Czechoslovakia, where, as technical manager, he was responsible for the building and starting up of the Semtin factory. When he returned to this country his increased experience was fully used by the company in the necessary reorganisation and concentration after the formation of Imperial Chemical Industries Ltd. In April 1929 he became Chief Engineer, Technical Department, for all the Nobel factories, and on 1st January, 1931, he was appointed Delegate Director to the Board of Nobel Division and Group Chief Engineer.

Mr. Wilson became chairman of the Nobel Division on 5th June, 1941, and on 31st May, 1945, he retired from that post, which he had filled with distinction during one of the most trying periods of the country's history. He was responsible for the design and the construction of many Ministry of Supply factories during the second world war, and his was the guiding hand behind the building of some twenty industrial explosives factories throughout the world. For such notable services in the second world war he was made a C.B.E., and on retirement he received many messages of congratulation. It was a notable career in which he had seen great changes and many developments.

In December 1944 he was appointed a Justice of the Peace for the County of Ayrshire. His private interests were many, though he devoted much energy to the National Savings Movement in Scotland during and since the war.

Mr. James Ross

Mr. James Ross, who died in retirement on 11th February at the home of his daughter in West Kilbride, Ayrshire, was well known and much respected in I.C.I. When he retired in 1938 he was head of the Company's Invoice Department in I.C. House, Millbank, and he had completed forty years of excellent service.

Mr. Ross began his career in the head office of Nobel's Explosives Company Ltd. in West George Street, Glasgow. He remained on the head office staff, and when, in 1921 on the formation of Nobel Industries Ltd., the headquarters of the new company were opened in Nobel House, Buckingham Gate, Mr. Ross was head of the Invoice Department. After the formation of I.C.I. he moved to Millbank to take charge of work in which he was a gifted specialist.

He was not to go into permanent retirement in 1938, and after war began and he had left London to live in Dumfries he resumed work in the M.S. Factory, Powfoot, where for two years he did more good work.

Several members of Nobel Division staff were present at the funeral.

Pigeon Trophy Presented

On 24th February at a dinner in the Ca'doro Restaurant, Glasgow, Mr. George Lupton, boiler chargeman at Powfoot Factory, was presented with the cups which were won last June by his pigeon "Southern Queen." He received the King's Challenge Cup and the Scottish National Flying Club Gold Cup, which were both awarded for the highest velocity recorded by a pigeon in the race.

Mr. George Lupton receives the King's Cup

The presentations were made by Dr. W. M. Anderson of Annandale, who is one of the most famous of all Scottish pigeon breeders and who has himself owned the winning pigeon in this race three times.

Impressive Service Records

At a recent ceremony held in Ardeer Recreation Club Dr. A. Fleck, a deputy chairman of I.C.I., presented Long Service Awards to 173 employees of Nobel Division whose total service added up to more than 5000 years.

Before handing over the awards Dr. Fleck, who congratulated each recipient individually, mentioned that in Nobel Division more than 1700 people, now employed, had received 20 years' service awards, more than 700 had awards for 30 years' service, and there were 50 people who had served for more than forty years.

"This is a great record of service," said Dr. Fleck, "and I want to convey to you thanks from the Board for your loyal service throughout the years." First to be presented to Dr. Fleck was Mr. John Leishman, who retired recently after half a century of work with the Company.

PHARMACEUTICALS DIVISION

Dr. W. A. Sexton

Dr. W. A. Sexton, who has been appointed a delegate director of Imperial Chemical (Pharmaceuticals) Ltd., joined I.C.I. in 1929 after graduating in science at Liverpool University and taking a Ph.D.

He first worked in the Research Department at Blackley and Huddersfield on dyestuffs intermediates, but was appointed section leader of Pest Control Section of Research Department in 1936. He became Assistant Research Manager in 1942 and Associate Research Manager of the newly formed Medicinals Division of the Research Department in 1943. He joined the board of Plant Protection Ltd. in December 1947.

Dr. Sexton was captain of Liverpool University Rifle Team and until ten years ago was keenly interested in mountaineering.

SALT DIVISION

Father and Son Pensioners

Mr. Charles Ashley, who retired in 1932, was joined on Salt Division's pensioners' list by his son Fred on 19th January. Between them they had 105 years' service with the Company.

Mr. Fred Ashley's first job with the Company, which he joined at West Works as a boy of 14, was making wooden packing cases. When cardboard containers were substituted for wooden cases he became a joiner's labourer, a job which he later exchanged for that of general labourer at Factory Works, where he continued to work until his retirement following almost 51 years' service. During his connection with the joiners he learned many of the tricks of the woodworker's craft, and the skill and knowledge thus acquired he now puts to full use in the well-equipped workshop he has built at his home.

Fred Ashley was born in Moulton and played both football

and cricket for teams representing his native village. He is especially proud of his playing days with the old Moulton Alex football team, formidable opponents for many years in Mid-Cheshire soccer circles.

He has a family of four sons and four daughters and has twenty-one grandchildren. Living with him is his mother-in-law, "Granny" Ashley, who in her 97th year is, we believe, Winsford's oldest resident.

Fresh-complexioned, breezy and energetic is Mr. Charles Ashley, Fred's father, who, with a single exception, has never failed to collect his pension punctually at the Meadow Office from his house in Moulton, a distance there and back of five miles, which he usually covers on foot.

Both Mr. Ashley senior and his wife are in their 86th year. Recently they celebrated the 65th anniversary of their wedding day. Mr. Ashley is the head of a family comprising three sons, six daughters, twenty grandchildren, and thirty-five great-grandchildren. Joining the Company at the age of 13 with Joseph Verdin & Sons, before the formation of the Salt Union, he can recall the time when his working week sometimes extended to eighty hours. When he retired in 1932 he had completed 54 years' service. Mr. Ashley has been a lifelong lover of the countryside and has a fine taste in walking-sticks, which he shapes for himself from materials selected with an expert eye during his country rambles.

It is our hope that father and son will regularly take their places in the pensioners' queue on pay-day for many years to come.

I.C.I. (INDIA)

Double Wedding

An interesting all-I.C.I. double wedding took place in Bombay recently when Mr. A. M. Cameron of the Bombay Sales Office married Miss Margaret Hamilton, and Mr. W. Aitken of the Dyes Head Office, I.C.I. (India), married Miss Marjorie Vynne. The two brides had worked with Nobel

A group taken after the double wedding in Bombay, showing Mrs. Cameron (left) and Mrs. Aitken in the centre of the front row. Mr. Cameron and Mr. Aitken are standing behind their wives on either side of the Rev. Mr. Patterson.

Division before coming out to India for the wedding. The ceremony was performed by the Rev. Mr. Patterson of the Scots Kirk, Bombay, and the reception was attended by many members of I.C.I. (India) staff.

CROSSWORD PUZZLE SOLUTION

(*see page* 108)

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R	■	T	■	E	■	C	■	R	■	E	■	R	■	■
9 I	D	E	S	■	10 S	T	A	I	N	■	11 S	T	O	12 P
M	■	D	■	13 D	■	I	■	C	■	14 F	■	U	■	A
S	■	■	15 L	U	R	O	N	■	16 F	L	O	R	A	L
T	■	17 M	■	L	■	N	■	18 K	■	O	■	N	■	U
19 O	P	A	Q	U	E	■	20 V	A	G	U	E	■	■	D
N	■	R	■	X	■	21 R	■	N	■	R	■	22 M	■	R
23 E	R	A	S	■	24 L	A	R	G	O	■	25 A	E	C	I
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29 W	I	N	N	I	N	G	T	O	N	W	O	R	K	S

THE MAY MAGAZINE

The main article in the May issue is on Pharmaceuticals Division. The first of April was the ninth birthday of I.C.(P), and we have taken the opportunity to review the remarkable progress made in these few years by this Division, "the youngest and most precocious member of the I.C.I. family" in the words of Mr. J. A. Cochrane, their sales manager. This article is followed by one from a distinguished contributor, Mr. W. M. Inman, chairman of Alkali Division. He writes on his visit to the Kruger National Park last year. His entertaining account of this trip is illustrated by some unusually fine photographs taken by himself.

Mr. H. Crye of Dyestuffs Division, himself a well-known cyclist in his day, writes on the remarkable popularity of time trial cycling. Every Sunday morning from March to October between 5 and 9 a.m. upwards of 6000 cyclists are trying to beat the clock along lonely country lanes. Our concluding article is on the Old Vic. Here Mr. George Devine, the well-known Old Vic producer, tells the fascinating story of how this remarkable institution, beloved of Londoners and indeed the whole country, has grown up and how it survived wartime destruction.

Binding of 1950 *Magazines*

The Kynoch Press have kindly agreed to bind the 1950 *Magazines* for those members of the Company who would like this done. The cost will be 7s. 6d. per volume, and this will include the provision of an index for 1950, which is being prepared. Inserts will also be bound with the *Magazines* if desired, but these—together with the set of *Magazines*—must be provided by the person placing the order.

At this stage we would ask all those requiring their *Magazines* bound to advise their *Magazine* correspondent of this fact in order that we may let The Kynoch Press know the total order and number of indexes to be printed. Further instructions will be given later.

SOUTHERN QUEEN

The Story of a Pigeon Classic Win

By George Lupton (Nobel Division)

Illustrations by Winslade

Last year Mr. George Lupton's "Southern Queen" covered the 484 miles from Rennes to his home in Scotland in 12 hours 20 minutes, beating 3000 rivals. Here Mr. Lupton gives the inside story of how he trained his bird to win this greatest of all pigeon classics and reveals the secret of his success.

At six o'clock on the morning of 1st July, 1950, 3791 Scottish homing pigeons were released at Rennes. That evening at 6.48, as I waited with my son beside the loft in my garden, we saw with mounting excitement my second choice, Southern Queen, beating in from the east. She came in smoothly. Swiftly, without circling or alighting, she wheeled through the open door of the loft and settled on her nesting box. We hurried in, picked up the tired pigeon, took the ring from her leg and, after noting the numbers, placed it in a small thimble which we then inserted in the sealed timing clock which recorded 6 hours 38 minutes 30 seconds.

Some fine wood shavings were still sticking to the pigeon's feet, which showed that she had not touched down on the long flight home. I had to send all the particulars to the Scottish National secretary within an hour, or be disqualified. When I did manage to get my message through, I was told that Southern Queen was the first arrival to be recorded. Since the Rennes race is a speed event this did not mean that I had clocked the winner. Before doubt was set at rest I had a long wait. Eleven hours later I was told unofficially that the award would go to me or to another well-known fancier.

On Sunday morning a special telegram was delivered which told me that I was the probable winner. Not long after, the National secretary phoned to say that Southern Queen was the winner of the arduous 484 miles race in a total flying time of 12 hours 20 minutes.

We picked up the tired pigeon and took the ring from her leg

Even then I was anxious. If my timing clock stopped before I delivered it at headquarters for checking I could still be disqualified. During the previous night I had wakened several times to listen for its ticking.

In the afternoon I went from Annan by car to deliver the clock to officials —and it did not stop! These clocks, by the way, have a capacity for timing the arrival of sixteen pigeons, but I did not record the arrival of my favoured homer, which came in at 8.10, because I would not risk any disturbance of the mechanism. That pigeon had also

flown well, and had I returned its time I would have gained further substantial prizes.

Timing in the arrival of pigeons has always been exciting, but perhaps it is now less so than in the earlier days, when the only clock was owned by the club at its headquarters, and competitors had to run from their lofts with the rings from their pigeons' feet. Then a ring-carrier was credited with a handicap of two minutes per mile if he cycled, and four minutes if he ran. Most fanciers had sons who did the running, and I remember an occasion when a keen young sprinter carried the ring in his teeth. In his excitement he swallowed it, to earn his father's humourless wrath. Once while I was running I met a rival coming by cycle in the opposite direction. At the club door he literally threw his cycle away to gain an advantage, but the machine inconveniently ran through a fishmonger's window.

Competitors had to run from home with the rings

Nowadays every serious flying man has his own clock which will run for six days. These clocks are officially zeroed and set going before the start of a big race. But the delivery of the clock after a race is just as worrying as any ring ever was.

I have outlined my experiences as a fancier because it contains the incidents and the history of a normal experience. With thought and patience any young fancier might expect to get just such results if he has his luck, and however much the skill shown in breeding and training there must be some luck as well. Nevertheless I have learned much, and by describing for young fanciers the training of Southern Queen I will be able to illustrate general advice by particular example.

As a result of some "bouncing" between my nephews and myself they presented me with Southern Queen when she was merely twenty-six days old. Even then she showed promise of performance. The chest seemed likely to be broad and strong, and the wings at the roots were powerful. After she was settled in my loft I allowed her to walk out to see the surroundings, but she was not encouraged to fly. Flight is natural to young birds and they will try it when they are ready.

When Southern Queen had learned to fly she was encouraged to circle freely from the loft with other young birds until, after a month, formal training began. Then she was put in a travelling basket with a water trough before the evening meal and encouraged to take a liberal feed. Only two places are allowed for feeding in my system: near the nesting box or

in a basket. Basket feeding trains the pigeon to eat with confidence if at a race release point there is a bad-weather holdover. Along with others Southern Queen was carried several times to a distance of two or three miles from home and released. The young pigeons found their way home over the short distance. After a week of daily training the distance was increased gradually to twenty miles in easy stages. Then the next important phase was reached: the pigeons were released singly to find the way home alone, each bird relying on instinct and experience.

Southern Queen was trained in this way (hand-tossed) twice over three miles, twice over ten miles, once over twenty miles and once over forty miles. Then she was entered for her first race, from Lancaster. She did not win, but her speed was good for a novice bird. When she was twelve weeks old she flew in the 189 miles race from King's Norton, and that flight was almost her last. She returned to my loft wounded by small shot, fired by someone who doubtless mistook her for a woodpigeon. The wounds were not serious, and Southern Queen was rested for the remainder of the season.

Next year, along the same route, she flew well at all stages until, in the 302 miles race from Christchurch, she came very close to winning a prize. This performance suggested that she would do well in the biggest events.

Along with others, "Southern Queen" was

. . . they flutter around and play

On 28th February, 1950, she was mated with the most suitable bird in the loft, and eighteen days after sitting on two eggs, young were hatched. So that the mother bird's strength could be conserved, she reared only one of the offspring. Soon afterwards two more eggs were in the nest and Southern Queen was sitting. These eggs were removed and china eggs substituted. Before the bird became impatient some twenty days had passed. Then the china eggs were removed and the bird began to nest again.

This procedure was repeated until Southern Queen was sitting on eggs due to hatch out the day she was basketed for the Rennes race. She flew back on anxious wings.

Other pigeons might require different treatment. Each has a character that must be studied, and above all the young fancier must establish complete confidence with his stock. He must speak to his pigeons and pet them, and he must behave consistently.

Even the things you wear can influence a returning pigeon. If I go into my loft without a cap my pigeons treat me as a total stranger. With my hat on they flutter around and play, perching on my shoulders. Quite recently, while awaiting the return of some late birds, I changed into my best suit. These latecomers just didn't behave, and instead of dropping fast and entering the loft they circled overhead. I went indoors, changed to my familiar clothes, and the birds came in instantly.

This may be a small point, yet it is all-important in pigeon racing. Valuable time can be lost at the end of a long flight if pigeons do not enter the loft instantly. Minutes will lose big races, and I have seen homing pigeons settle on the loft roof

carried several miles from home and released

or circle round many times before alighting. Mine do not; and for that circumstance I have to thank a magnificent act in a Bertram Mills circus many years ago. A beautiful young woman dressed in hunting habit resembling the costume worn in "Annie Get Your Gun" entered the ring carrying a shotgun and a very large game-bag. Twenty beautiful coloured pigeons flew in the big top. She fired a blank cartridge and held open the bag. The pigeons dropped like stones into the bag. I found out, much later, that that bag contained a few maple peas!

My system is not so melodramatic, but my birds are hungry and thirsty after flight, and they know that food and drink await them in the nesting boxes.

The cost of pigeon racing is not heavy. My membership subscription to the Annan and District Homing Club, which is affiliated to the Scottish Homing Union, is merely 14s. per annum, and my subscription to the Scottish National Flying Club is 12s. 6d. per annum. For each bird entered in the Scottish national race from Rennes there is a 10s. entry fee, which pays for transport and insurance of £10 per bird if the consignment is lost. Birds for the Rennes event are race-marked in Glasgow three days beforehand. They are sent to London by rail and flown thence to Rennes in a chartered plane. Three officials (conveyors) travel in charge of the birds, feed and water them on the journey, and release them at the starting-point.

The first prize in the open race is £75, and there are also sectional prizes. I was an entrant in the South section and gained a further prize of £12 for my bird. In addition money may be won from sweepstakes or pools. If the winning bird is entered in all these (they have entry fees ranging from 6d. to £5) the prize money may add up to as much as £800, but such large stakes are unusual.

There will be losses in a normal racing season. Birds can be shot at, struck down by hawks, exhausted in storm or killed in collision with telegraph wires. Losses from such hazards are not particularly high, yet it is well to remember that a racing pigeon worth perhaps £100 or £200 can disappear in a race.

Breeding and training racing pigeons is fun. In the evenings nothing is more peaceful or pleasant than the relaxation of watching your pigeons wheeling round and round the loft on their exercise flight. The rushing sound of pigeons' wings beating the air and the grace of their flight at sunset are the loveliest things I know.

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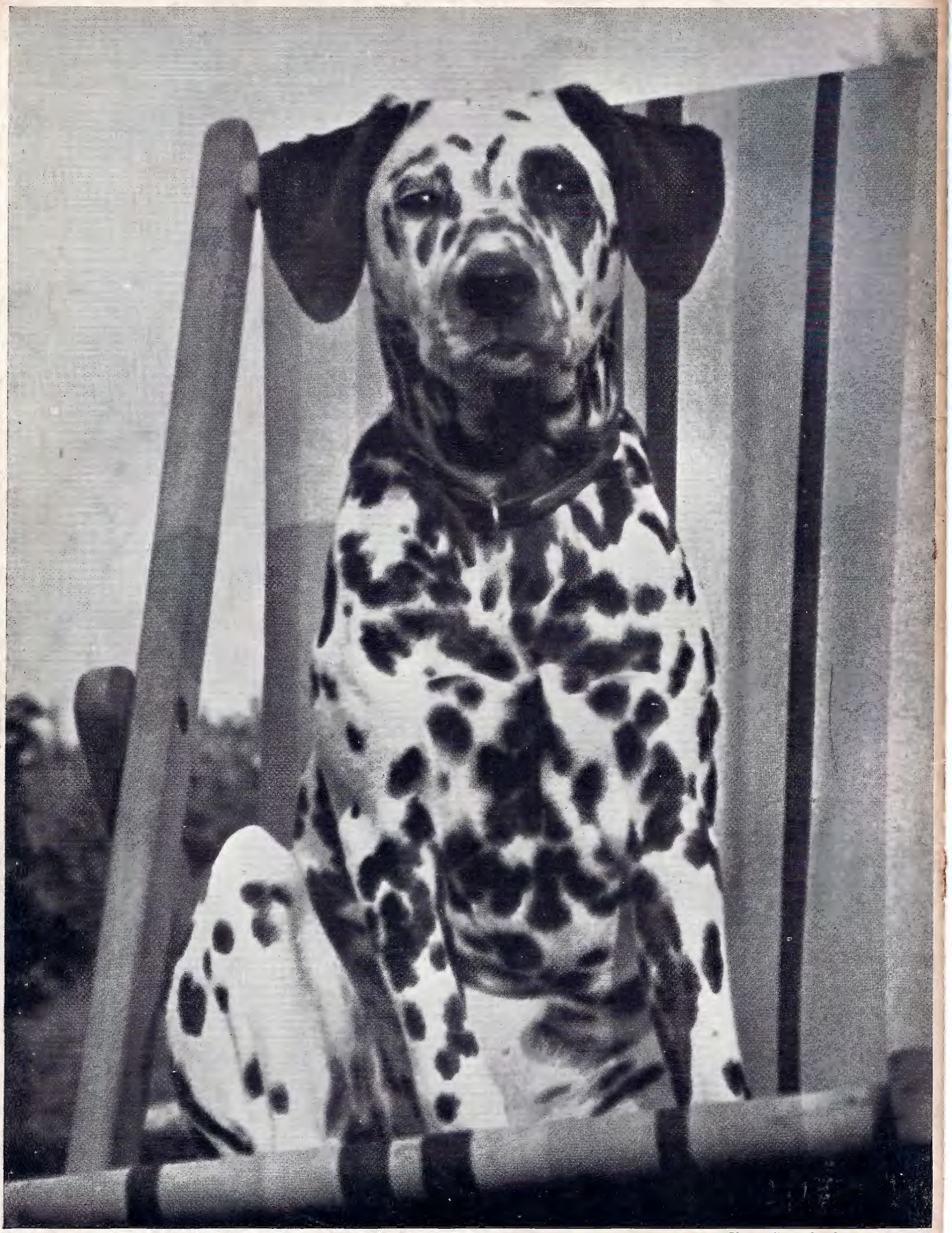

Dalmatian study

Photo by J. E. Edwards
(Alfloc Water Treatment Service)